AVIATION WEEK

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MAY 1, 1950

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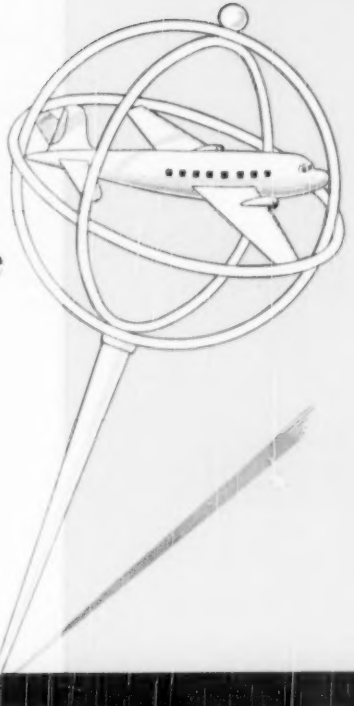

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Aviation Week

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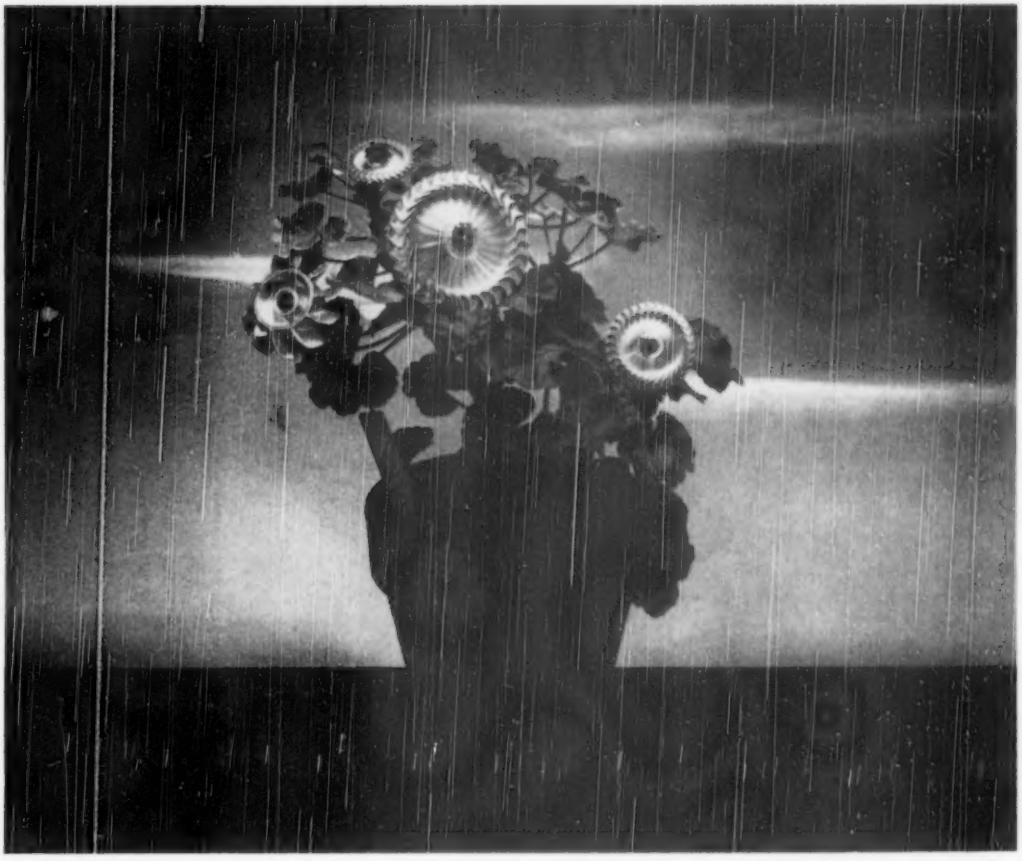

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WHO'S WHERE

In the Front Office

At a special organization meeting of Curtiss-Wright Corp.'s board, the following officers were re-appointed: **Paul V. Shields**, chairman; **Roy T. Hurley**, president; **Joseph F. McCarthy**, vp-finance; **Maj. Gen. Edward M. Powers**, vp-engineering; **George R. Hill**, controller; and **Peter J. Murphy, Jr.**, secy. At company's regular annual meeting the following directors were named: **Edwin J. Beinecke, T. Roland Berner, Edgar S. Bloom, J. Cheever Cowdin, Lou R. Crandall, Charles A. Dana, Roy T. Hurley, Robert W. Lea, Joseph F. McCarthy, John A. McCone, Stuart A. Reed, Paul V. Shields**, and **Henry S. Sturgis.**

Fritz Besancon has been made vp of KLM (Royal Dutch Airlines) general technical production succeeding the late vp **H. Veenendaal**, and **J. J. Van Balkom** is new vp-general operations succeeding the late **H. Fuchs.**

Roger F. Burkhardt, with American Airlines' reservations division 14 years, has been named director of reservations and ticket offices.

Edward Dart has been made executive engineer of Piasecki Helicopter Corp., and will supervise business details of executive and administrative portion of the company's engineering dept. Before joining this company, he was with Glenn L. Martin Co., Higgins Aircraft Co., and Seversky Aircraft (now Republic Aviation Corp.).

Changes

Gordon Hileman has been appointed Aeronca Aircraft Corp. asst. sales and service manager to handle all aircraft service, sales promotion, publicity and advertising . . . **Gustav E. Lachman** has been made acting production manager for Piasecki . . . **B. D. Russel** and **Erik Nelson** have been appointed asst. sales manager and a sales representative, respectively, of Canadair, Ltd. . . . **Wood T. Henry** has been named to the newly created post of director of research activities at Rensselaer Polytechnic Institute . . . **Robert A. Nordskog** has been appointed general manager of Transport Equipment Co., Burbank. He was formerly foreman at Navigation Maintenance Corp. and Lockheed Aircraft Service.

► **Around the Airlines**—**W. E. Golden** has filled newly created post of chief station manager for National Airlines and will be in charge of station planning and training . . . **Robert G. Strong** is Slick Airway's new asst. to general sales manager in sales, promotion and research . . . **John P. Robertson** has been appointed Trans World Airline city sales manager in Zurich . . . **Edward P. Whitney** of Western Air Lines has been promoted to district sales manager for Wyoming and Nebraska.

Saying Good-By

Capt. J. Laurence Pritchard, secretary of the Royal Aeronautical Society for 25 years, is retiring soon. He was also editor of the RAES Journal since 1919. Last February 25, Capt. Pritchard celebrated his 65th birthday.

INDUSTRY OBSERVER

► **American Airlines is experimenting with automatic instrument approaches utilizing the Sperry A-12 automatic pilot, with two DC-6s already equipped with the system and other conversions scheduled. First tests have indicated that the work forced on the automatic pilot cannot produce structural damage to the airplane or impose control forces which the human pilots cannot overpower.**

► Old controversy between instrument landing system (ILS) and ground control approach radar (GCA) is still alive, as indicated by the plan of Air Navigation Development Board to shelve Automatic GCA (AVIATION WEEK April 3) until 1963 for the ultimate program, meantime using ILS, omnirange and distance measuring equipment.

► **British Flight magazine shows photos and exposes details of the U. S. Navy sonobuoy system for spotting submarines from the air, in a description of the British anti-submarine plane Firefly, equipped with 12 American AN/ARR-3 sonobuoys, with transmitting range of approximately 12 miles. Sonobuoys are dropped by parachute, in quantity around a suspected area. Strength of radio signals from the sonobuoy varies with distance of buoy from submarine, enabling plane to plot position of submarine.**

► New production version of the Boeing B-47 Stratojet of which 82 are ordered in 1950 USAF procurement will increase range by carrying droppable wing tanks, and additional internal fuel tankage. Maximum gross takeoff weight is increased to 185,000 lb. (Boeing started with a very low gross takeoff weight of 125,000 lb. for the XB-47). A multi-nozzled liquid-fueled rocket motor (similar in principle to that used in the German V-2 rocket missile) has replaced the individual 18 JATO solid-fuel bottles to provide assisted takeoff. New RATO device gives 20,000 lb.-thrust for takeoff as compared to 18,000 lb.-thrust of the JATO units.

► **Indonesian Airways is contracting to buy eight Convair-Liners out of the 15 which Convair has turned over to its subsidiary Air Fleets for disposal. Meanwhile another Convair-Liner deal is in the making with Ethiopian Airlines.**

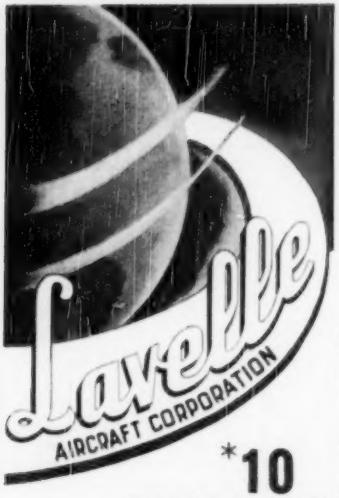
► An audio-oscillating system is expected to be selected as the most satisfactory means of airport surface detection equipment, to indicate to the airport ground control station when an airplane lands. System probably would be rigged to a Micro Switch on the plane's landing gear, so that a signal would be generated when the gear touched the ground. Signal would be received through a controller's panel which may be similar to those used by railroad dispatchers to show movement and position of trains.

► **Royal Canadian Navy has completed arrangements for purchase from U. S. government of enough Grumman Avenger torpedo bombers to equip two anti-submarine squadrons.**

► Douglas A2D Navy turboprop attack plane is completing taxiing tests and is due to make its first flight probably within the next 10 days, following closely after the first Navy turboprop plane flight of the Convair XP5Y-1 flying boat. A2D has an Allison T-40 double turbine installation, turning a six-blade Aeroproducts counter-rotating propeller, similar to the four T-40s on the XP5Y-1.

► **New upper-deck cargo door and increased payload now quoted at 68,000 lb. are features of the newest Boeing C-97 Stratofreighters, 14 of which are ordered in USAF 1950 procurement. Cargo can be loaded by fork lift through new upper door; in addition to rear cargo doors and ramp loading arrangement.**

► The 50 Grumman Guardian AF anti-submarine planes ordered in Navy's 1950 procurement program claim the designation of the largest single-engine plane currently flying. Plane weighs 16,000 lb. empty, about 1000 lb. more than the Martin AM-1 Mauler, its closest competitor.



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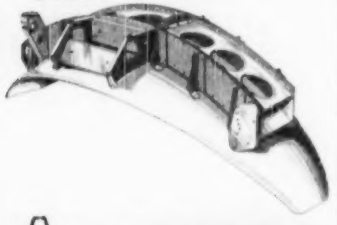

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AVIATION CALENDAR

May 2—Fresleriine operator members of Aeronautical Training Society, Adolphus Hotel, Dallas, Tex.

May 3—Aeronautical Training Society annual meeting, Adolphus Hotel, Dallas, Tex.

May 3-4—15th National Aircraft Standards Committee national meeting, Aircraft Industries Assn. offices, Hollywood-Roosevelt Hotel, Los Angeles, Calif.

May 3-5—Organization meeting for National Aviation Conference, Oklahoma City, Okla.

May 9-20—Fourth annual technical conference of the International Air Transport Assn., Berkeley-Carteret Hotel, Asbury Park, N. J.

May 12-13—Midwestern conference on fluid dynamics and meeting of American Physical Society (fluid dynamics div.) in conjunction with dedication of new mechanical engineering building, University of Illinois, Urbana.

May 18-19—Annual meeting and third national forum of Corporation Aircraft Owners Assn., Hotel Statler, Washington, D. C.

May 19-20—Seventh annual personal aircraft meeting, sponsored by Institute of Aeronautical sciences, Lassen Hotel, Wichita, Kans.

May 23—National meeting of AIA airplane Technical Committee, Carlton Hotel, Washington, D. C.

May 24-26—Technical conference on telemetering, sponsored by American Institute of Electrical Engineers and National Telemetering Forum, Benjamin Franklin Hotel, Philadelphia, Penn.

May 25-26—Aircraft Industries Assn. board of governors meeting, Williamsburg, Va.

May 25-27—Spring meeting, Society for Experimental Stress Analysis, Hotel Statler, Cleveland.

May 27—Annual spring air regatta, Philadelphia Aviation Club, Wings Field, Ambler, Penn. (May 28 is alternate date in event of bad weather.)

May 27-30—Wright Memorial Glider Meet, South Dayton Airport, Dayton.

June 1-4—Aviation Writers Assn. annual convention, Hotel Mount Royal, Montreal, Canada.

June 10-13—National Aeronautics Assn., annual convention, Hotel Statler, St. Louis, Mo.

June 10-25—International aero exhibition, Centenary Palace, Brussels, Belgium.

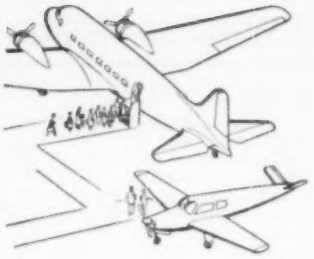
July 7-8—Royal Air Force 1950 display, Farnborough airfield, England.

Sept. 5-10—Eleventh flying display and exhibition, Society of British Aircraft Constructors, Farnborough airfield, England.

Oct. 16-20—1950 annual general meeting of the International Air Transport Assn., Fairmont Hotel, San Francisco.

PICTURE CREDITS

11—(bot.) EAL; 12—Boeing; 14—Convair; 17—Northrop; 21—McGraw-Hill World News; 22—(top) C. Cain, (centr & bot.)—H. Levy; 23—(bot.) USAF Air Materiel Command; 27—USAF Air Materiel Command.



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NEWS DIGEST

DOMESTIC

American Airlines said its new daily transcontinental air coach service with 70-passenger DC-6s is an "unqualified success." During first ten days of operation, which began Apr. 9, more than 86 percent of the seats were sold, and 1630 passengers carried. About half of the passengers flew coast-to-coast, the other half being split N. Y.-Chicago and Chicago-West Coast. AA's former DC-4 coaches had less than 50 percent load factor.

Northwest Airlines' Anchorage-Orient route got a new lease on life when the Joint Chiefs of Staff indicated that maintenance and operation of commercial air facilities through the Aleutians is in the national interest. Previously, the Defense Dept. decided to close many of its Aleutians facilities, and CAB had notified NWA to take "appropriate steps" regarding the route. New cost estimate to keep the facilities open: $3 million, rather than the $4 million originally estimated.

Air Transport Assn. joined the Transportation Association of America in opposing Commerce Dept. absorption of Maritime Commission. ATA's probable reason: plan would set pattern for strict Commerce Dept. control over CAB.

Airport Operators Council, in annual meeting, drew 125 representatives to Cleveland from airports, airlines, manufacturers and government to discuss problems of finances, expansion requirements, and related services for and at airports. Election of officers was to come later in the week.

Parks Air Lines' inactive feeder routes should be divided among Turner Airlines, Ozark Air Lines, and Mid-Continent Airlines, CAB Examiner Ralph Wiser said. Under Wiser's recommendations, Turner, a certificated feeder, would get routes awarded to Parks in 1947 in the Great Lakes Area case; Ozark, a previously unsuccessful feeder applicant, would get routes granted Parks in the Mississippi Valley case; and Mid-Continent would get Parks' North Central Area routes. Mileage involved: 4000, plus.

New sales approach in the dollar-short foreign market has been worked out by Hiller Helicopters. The Palo Alto firm has arranged to sell its rotorcraft in England and take 40 percent of purchase price in sterling, provided its British agent can order ten or more helicopters at a time. Hiller will transfer its sterling, collect in dollars.

FINANCIAL

Republic Aviation Corp. gives net income for first quarter of this year as $363,033, after provision for federal and state taxes. Sales for the period were $15,195,572. Backlog at Mar. 31 stood at $47 million. Comparative figures for the same period in 1949: Income $245,055 on sales of $9,706,107; backlog $50 million.

Douglas Aircraft Co. reported sales of $26,203,335 for the first three months of fiscal 1950 ending Feb. 28, compared with $25,868,483 for the same period the previous year. Net earnings of $931,319, however, were lower than 1949 first quarter's $2,001,525. Setting up reserves and other incidentals are said to have accounted for a large part of the difference. As of Apr. 1, backlog was $270,457,688, with 13 percent being commercial orders. President Donald Douglas states that sales for fiscal 1950, ending Nov. 30, are expected to exceed the $117 million reported for last year. The company has voted a quarterly dividend of $1.25 per share on 600,000 shares outstanding. Personnel reached post-war high of slightly over 20,000.

Glenn L. Martin Co. notes a profit for the first quarter of 1950, and President C. C. Pearson says "prospects for additional commercial contracts appear promising." Including the recent sale of 65 Model 4-0-4 transports, commercial contracts as of Mar. 31 accounted for 35 percent of Martin's $92,118,000 order backlog.

Westinghouse Electric Corp. net income for the first quarter of this year was $11,890,377, equal to 87 cents per common stock share. This compares with net income of $10,866,921 or 79 cents per share of common in the same period of 1949. Net sales billed totaled $229,933,898 against $226,658,722 a year ago.

INTERNATIONAL

Mexico ratified the International Civil Aviation Organization's Convention on the International Recognition of Rights in Aircraft. U. S. previously had ratified, and with 23 other nations having signed the pact and expected to ratify, the convention is due to take effect July 4. Main effect: Easing one problem of international airlines in obtaining financing of new equipment by requiring contracting state to recognize mortgage rights on aircraft held in another country that has approved the convention.

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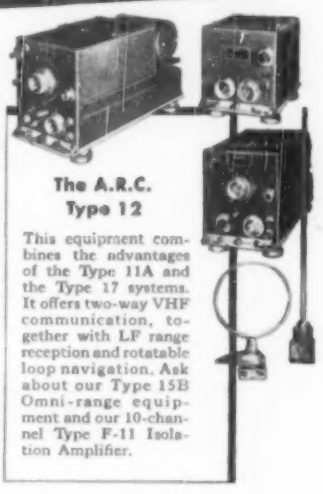

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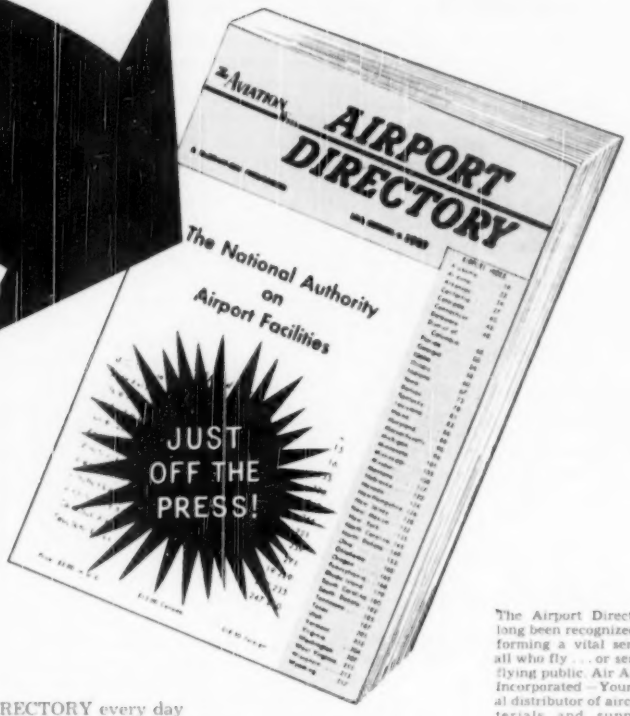

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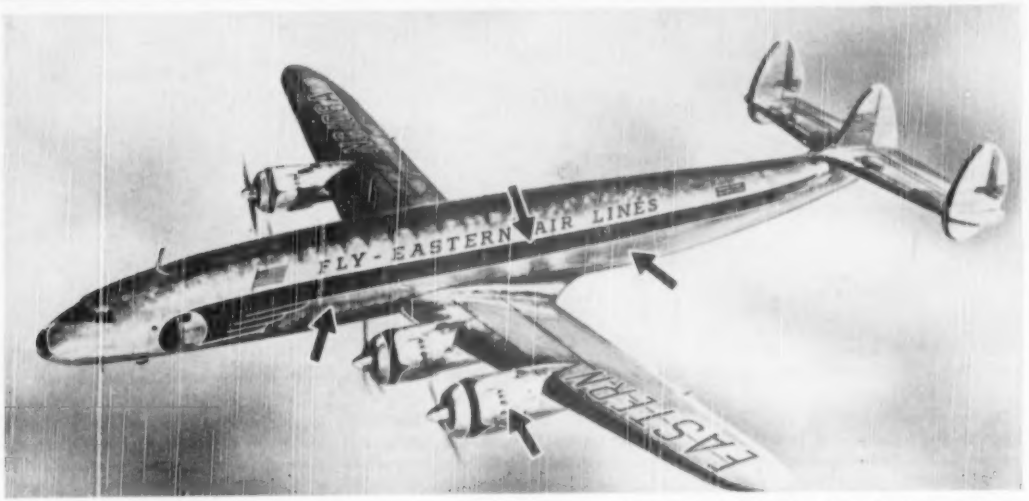
Seaplane Bases

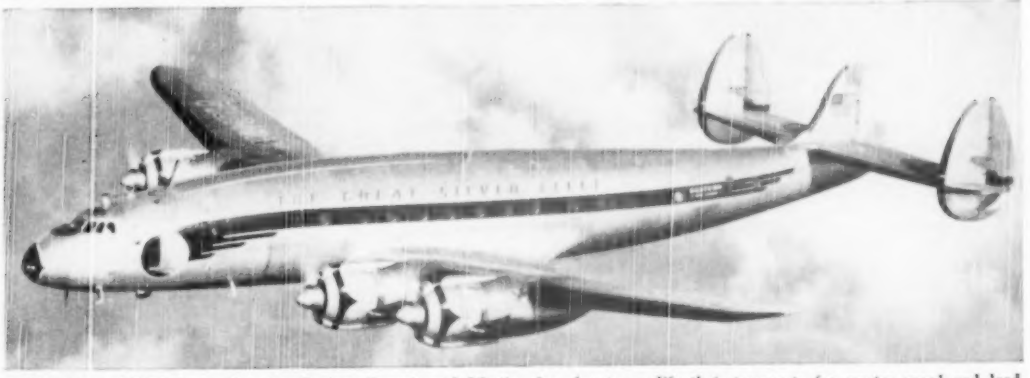
Vol. 52, No. 18

AVIATION WEEK

May 1, 1950



SUPER CONSTELLATION with longer fuselage, jet exhaust stacks and new windows, (arrows) is Lockheed's modernization of . . .



PRESENT CONNIE type. Douglas, Boeing, Convair and Martin also plan to modify their transports for greater speed and load.

Super Connie Leads New Transport Plans

By Charles Adams

U. S. aircraft manufacturers are tumbling over one another with new plans for improving performance of existing transports during the four- or five-year period before pure jets make a serious competitive challenge in the commercial field.

Latest developments come from Lockheed and Boeing which have new versions of the Constellation and Stratocruiser. Lockheed already has wrapped up an order, with Eastern Air Lines buying ten Model 1049 "Super Constellations" that will be 18 ft. longer than existing types, have more powerful engines, and be able to carry 92 passengers.

► **Airline Attitude**—The airlines generally favor the manufacturers' stretch-out program—especially in view of the government's reluctance to finance development of jet transport prototypes. Carriers feel that if they must spend their limited funds for new equipment during the next few years, refinements of present transports offer the best return for the money.

Meanwhile, Douglas, Martin and Convair also have worked out plans of getting more out of existing transport airframes through installation of turboprops, lengthening fuselages, or both. What's happening in the transport field in many respects parallels the military evolution of the B-36, which, tagged for obsolescence several years ago, has gained a new lease on life with auxiliary turbojet engines.

JET POD STRATOCRUISER is possible next development of Boeing to increase performance of its transport (see chart, page 13).

Some observers inject a note of caution as they watch the trend. They question, for instance, whether existing transports are stressed for the greater gust loads likely to be encountered at higher speeds. The Air Line Pilots Assn. especially has voiced apprehension over efforts to step-up the maximum gross weight of present airliners.

▶**Jet Pod Stratocruiser**—Boeing last week announced officially that it views the addition of two auxiliary pod-mounted turbojet engines to its Stratocruisers as the next possible step in the further development of the double-decked transport (AVIATION WEEK Mar. 13). This would increase the B-377's cruising speed from 300-340 mph. to 360 mph. and would boost the gross takeoff weight from the present 142,500 lb. to 153,000-165,000 lb.

The auxiliary jet pods (probably Westinghouse J-34s rated up to 3400 thrust-pounds each) would be installed outboard of the Stratocruiser's four 3500-hp. Pratt & Whitney Wasp Major reciprocating engines. Boeing previously had announced other tentative plans for replacing the piston-type engines with four turboprops to give the B-377 (and its C-97 military transport counterpart) more speed, range, payload.

This second—or turboprop step—in the progressive development of the Stratocruiser would also include a 10-ft. lengthening of the ship's fuselage. Gross takeoff weight would rise to 165,000 lb. and cruising speed would be 360 mph.

Beyond the turboprop Stratocruiser, Boeing plans a turbojet craft—probably a swept-wing, jet pod plane with a maximum speed of 560 mph. D. A. Buck, Boeing sales engineer, recently discussed a 75-passenger, low-wing turbojet with 140,000-lb. maximum gross weight and capable of flying 1800 mi. (equal to Chicago-San Francisco) with full payload and adequate fuel.

▶**Connie Sale**—Lockheed's Super Constellations will cost Eastern Air Lines over $1,500,000 apiece. Total price tag for the ten ships with spare parts and engines is $18 million.

The Model 1049S will have a maximum gross weight of about 116,000 lb. —roughly 9000 lb. more than the current Model 749A Constellations. First commercial Connies—the Model L-49S —were rated at only 90,000-lb. maximum gross takeoff weight.

EAL's new ships, which are expected to go in service by the fall of 1951, will have Wright R-3350-C18CA1 engines developing a total of 11,000 hp. This represents a 1000 hp. total power increase over EAL's present Connies.

As a result, the cruising speed is expected to jump from 300 to 330 mph. (A new jet exhaust stack installation is being counted on for a 12-13 mph. increase in cruising speed at 20,000 ft.) Takeoff, climb and landing characteristics of the new transport are expected to be almost identical with present Connies, on which EAL has accumulated over two billion passenger-miles.

EAL President E. V. Rickenbacker said the Model 1049S would have increased visibility through use of square cabin windows, improved sound-proofing, and advancements in air conditioning and temperature control. But he stressed that despite these refinements the Super Connie would not show its full capabilities for three or four years.

▶**Turboprops Eyed**—"At that time," Rickenbacker explained, "it is planned to equip them with improved Allison turboprop engines. Four of these engines of 3500 hp. each will increase the total horsepower per plane to 14,000 and the speed to 400 mph." (The Allison T-38 is now rated at 2750 hp.)

The EAL president predicted that Super Constellations with turboprops would be on hand "maybe by the end of 1954 and certainly not later than 1955." He said the turboprop craft would be able to fly 92 passengers from New York to Miami in three hours.

Lockheed officials state that the EAL Connie is only one of a series of new versions designed to seat from 46 to 102 passengers. The Model 1049S is not the same as the Model 949 (planned with compound engines) which Lockheed had under development for potential military and commercial use. The Model 949 also was designed with the extended fuselage.

▶**Douglas Program**—Developments at Douglas in many respects parallel Boeing and Lockheed plans for modifying existing transports with turboprops and high-density seating arrangements. Douglas early this year sold six of its DC-6Bs to United Air Lines and 11 to American. Like the Super Connie, the DC-6B has a longer fuselage (by five ft.), more powerful engines, and can seat up to 92 passengers.

Douglas says its DC-6s are admirably suited to turboprop installations, and both American and United have expressed great interest in the idea. (American is reported to have obtained a Navy contract to modify a DC-6 for turboprops.) UAL President W. A. Patterson declared recently that turboprop engines "will definitely introduce a new era in air transportation."

	B-377	B-377 + JETS	B-377 TURBO PROP	JET TRANSPORT
Gross Weight	145,800 lbs	153,000-165,000 lbs	165,000 lbs	140,000 lbs
Wing Loading:				
Takeoff	84 lb/sq.ft	88-95 lb/sq.ft.	95 lb/sq.ft.	62 lb/sq.ft.
Landing	65 lb/sq.ft.	68 lb/sq.ft.	67 lb/sq.ft.	47 lb/sq.ft.
Maximum Gear Load	72,900 lbs	76,500-82,500 lbs	82,500 lbs	70,000 lbs
Tire Pressure	110 PSI	—	—	135 PSI
Allowable Cross Wind Landing	40 mph	40 mph	40 mph	30 mph
Payload	18,560 lbs	18,560 lbs	22,000 lbs	20,000 lbs
Passengers	61 – 75	61 – 75	73 – 87	75
Cargo Vol/Passenger	11.3-13.9 cu. ft.	11.3-13.9 cu. ft.	11.5-13.7 cu ft	10 cu. ft
Height of Cabin Door	10 ft.	10 ft.	10 ft.	10 ft.
Height of Cargo Door	5 ft.	5 ft.	5 ft.	8 ft.
Span	141 ft.	141 ft.	141 ft.	139 ft.
Length	110 ft.	110 ft.	120 ft.	104 ft. 3 in.
Height	38 ft. 3 in.	38 ft. 3 in.	38 ft. 3 in.	35 ft. 4 in.
Height (Fin Folded)	26 ft. 7 in.	26 ft. 7 in.	26 ft. 7 in.	—
Gear Tread	28 ft. 6 in.	28 ft. 6 in.	28 ft. 6 in.	50 ft. (Outriggers)
Wheel Turning Diameter	78 ft.	78 ft.	78 ft.	75 ft.
Airplane Clearance Diameter	170 ft.	170 ft.	170 ft.	175 ft.
Fuel Capacity	7790 gal.	9190 gal.	9190 gal.	10,000 gal.

PROGRESSIVE PLAN for development of the Stratocruiser up to pure jet is shown in these Boeing calculations.

He said United would look favorably on the purchase of four turboprop engines for use on an experimental cargo plane. But he added that the turboprop engines probably will not be in quantity production for at least two years.

► **Herlihy View**—United's Vice President-Operations, J. A. Herlihy, has pointed up the need for progressive development of existing transports if U. S. manufacturers are to make many more sales before completely new turboprop and turbojet craft become available. He said: "I do not consider that our company can safely undertake the financial risk of buying any additional types of conventional piston-engine aircraft, inasmuch as they already are rendered obsolescent by turbine-powered transports."

Douglas officials have stated that one of the reasons the Mexican airline Compania Mexicana de Aviacion and the Italian carrier Linee Aeree Italiane placed orders for DC-6s was because of the craft's adaptability to the turboprop. It is estimated that installation of four Allison T-38 turboprops on the DC-6 would increase the ship's cruising speed by 75 mph. (AVIATION WEEK Jan. 16).

Airlines are deeply interested in the scheduled June debut of an experimental cargo Convair-Liner which is slated to fly with two Allison T-38s. Martin, which recently sold 65 of its twin-engine Model 4-0-4 transports to Eastern and TWA, has described the ship as "the first production airliner designed for conversion to turboprops."

► **Waiting Interval**—Some industry officials warn, however, that there will be a substantial interval between commercial turboprop experiments and actual use of the new ships in scheduled service. Donald Douglas agrees with Rickenbacker that 1954 is a likely date for introduction of the turboprop airliners. How much turboprop engines (in quantity production) will cost is still a lively subject of speculation.

Even so, Douglas has ambitious turboprop plans for the C-124A Globemaster II as well as for the DC-6. The C-124A is a development of the C-74 and is capable of carrying bulkier loads. Douglas made a brief study of the C-74 powered with Allison T-40 turboprop engines, but this project has been abandoned in favor of the C-124 configuration.

If the go-ahead signal from the military were given now, the Douglas company believes it could fly a prototype turboprop C-124 in about 20 months. No high-density seating arrangement has yet been prepared for the turboprop version of the C-124.

► **PAA Shows Interest**—When Douglas was making its brief study of a turboprop C-74 some months ago, Pan American Airways expressed interest in such a craft with a high-density seating arrangement. But neither the carrier nor Douglas has pursued the idea.

Douglas' Long Beach (Calif.) plant is currently working on an order for 66 C-124s with piston engines. A prototype is flying, and the first production models of the C-124 will be delivered this year. The ship will be used as a strategic support transport, a ground and field force heavy cargo carrier, and a Tactical Air Command cargo and troop carrier.

A design which fitted the 8000-hp. Wright T-35 turboprop to the C-74 (Globemaster I) was developed by Douglas' Long Beach engineering unit as early as January, 1946. Then, in 1947, a design study for installing the smaller and lighter Pratt & Whitney PT series turboprops in the C-74 was begun.

When the C-124A Globemaster II was introduced and (in 1948) purchased by the Air Force in quantity, immediate steps were taken to continue research around turboprops as the logical step to permit the USAF to achieve continued growth and utility with a production aircraft. The C-124A is now designed to carry a 50,000-lb. payload 870 nautical miles and return to base without refueling. It is powered by four P&W R-4360-20W Wasp Major engines providing 3500 hp. each for takeoff.

► **Engines Studied**—In July, 1948, preliminary designs were started to use either P&W PT-2 or the Allison XT-40 turboprops. Douglas said these studies indicated definitely that, provided the engines passed their type tests in accordance with manufacturers' expectations, the gains in weight saving and performance of an eventual

change to prop-turbine powerplants.

At the Air Force's request, a final study was undertaken around the Allison XT-40. This study was finished and presented to the Air Materiel Command in May, 1949, together with firm prices and delivery information, covering design and construction of a prototype heavy cargo transport plane to be designated the Douglas Model 1183A. The plan called for utilization of existing C-124A components whenever possible to decrease costs and permit early completion and flight.

► **Performance Gain**—With installation of the XT-40, the design takeoff gross weight of the basic C-124 was increased from 175,000 lb. to 200,000 lb., with a decrease in takeoff distance from 4800 ft. to 3500 ft. to clear the 50-ft. obstacle. Sea level climb increased from 800 fpm. to 1800 fpm., and the one-engine-out service ceiling rose from 13,900 ft. to 27,600 ft.

Douglas says that the performance characteristic estimates of the turboprop Model 1183A have been verified by Air Force personnel at the request of the Director of Research and Development of the Air Materiel Command. As a result, the manufacturer declared, "Every fact logically and technically indicates that outstanding advantages are to be realized in performance and utility with the C-124 type plane fitted with turboprops—and a prototype should be developed now to permit a smooth transition in the production line."

Higher Air Budget Victory Seen

Joint Chiefs' endorsement and Symington's report strengthen air power advocates in Congress.

Air Power advocates led by Rep. Carl Vinson (D., Ga.), appeared on the way to victory last week in their drive to add $583 million for aircraft procurement onto the 1951 fiscal year defense budget.

► **JCS Backs Vinson**—Joint Chiefs of Staff endorsed the Vinson amendment providing $200 million additional for USAF and $383 million additional for Naval aircraft procurement in a report to Secretary of Defense Louis Johnson.

Their recommendation was not immediately reported because Secretary Johnson was making a vigorous effort to get the four top military leaders to modify their recommendation downward. He urged that Russia's primary objective is that this country spend itself into economic collapse. However, chances were better than even that Johnson would recommend some increase for aircraft procurement.

But Vinson moved to upset Johnson's whittling tactic and build up support for the full amount of his amendment by summoning the Chiefs of Staff to a public hearing before the House Armed Services Committee which he heads.

A key member of Congress summed up the situation: "If the Joint Chiefs publicly state that the defense requires a minimum $583 million additional for aircraft procurement, how can any congressman, with Russia shooting down our unarmed planes, vote against it?"

FIRST XP5Y-1 FLIGHT PHOTO

First flight picture of the Convair XP5Y-1 Navy flying boat, first American multi-engine plane powered with turbine propellers shows the 60-ton craft after takeoff from San Diego Bay. Convair has an experimental contract for two of the planes, designed for long-range search and anti-submarine patrols, and may get a fiscal 1951 production contract if the experimental craft prove out. Advantage of the double turbine units in each of the four Allison T-40 engines, is seen in long-range low speed cruising, since power can be reduced half for each engine by shutting off one of its two turbines. Plane is credited with a design top speed of 392 mph. and its four engines are rated at 5500 shaft hp. each. It is first flight demonstration of the Navy-fostered turboprop in a Navy-developed plane and flight data will be closely studied for further military and commercial plane applications.

▶ **Symington Reports**—In a parting shot, Secretary for Air Stuart Symington once more spurred the move for increased air procurement. His semi-annual report, released on the eve of his departure to become chairman of the National Security Resources Board, called attention to the fact that at the procurement level projected in the 1951 fiscal year budget, USAF's striking force will be reduced from the present 45 regular modern Air National Guard groups to a total of 42 modern groups (including ANG) by 1956.

Consensus on Capitol Hill, as this issue went to press, was that the Vinson amendment: "probably" would be adopted, with "some possibility" that it would be reduced to a more modest figure. Gen. Dwight Eisenhower proposed $150 million additional for USAF procurement, nothing for the Navy. The House is expected to reach a showdown on the issue this week.

▶ **Deterioration Preventitive**—Vinson's amendment would not increase the country's airpower, only prevent the USAF striking force from deteriorating and the Navy's air arm from "withering on the vine." The 1951 fiscal year budget, earmarking $1365 million for USAF procurement and $633 million for Naval aviation procurement, would permit the purchase of 1383 new planes by USAF and 817 by the Navy. Vinson's amendment would provide for 77 additional USAF planes and 530 additional navy planes. The Navy's combatant air arm of 6233 planes (4389 regular, 1844 reserve) would dwindle to 3000 in ten years under the procurement level projected in the 1951 fiscal year budget. Vinson's amendment would sustain the Navy's 4389-plane regular strength; it would not provide for the 819 reserve planes which would have to be procured during the coming fiscal year to sustain the Navy's present reserve strength.

Symington's report added up to this conclusion: The ability of USAF today to meet an initial devastating attack for a brief period, the mission contemplated by the 48-group program, is questionable and will become more questionable with time under the $1.3-billion procurement level planned by the administration. It could not fulfill the mission contemplated in the 70-group program of holding air superiority for an 18-months mobilization period.

The 70-group program provided for 8100 reserve aircraft to replace early losses. "Without such reserve," Symington observed, "the rate of operation of Air Force combat units would be sharply reduced shortly after the beginning of hostilities; and would progressively decline. . . . The aircraft industry could expand. . . ."

The 1951 fiscal year production planned in the budget would be 23.9 million pounds. A 48-group program would require annual production of 31 million lb.; a 70-group program, an annual production of 86 million lb.

▶ **Best Guarantee**—Declaring that military readiness is the best guarantee of peace and "preparedness is the price for survival" against an attack, Symington warned, "this nation cannot afford the luxury of that small military establishment considered normal in the past. The character of modern weapons assures us that, once hostilities have begun, there will never again be an unmolested period in which it will be possible for the country to build up its armed forces."

Other points made by Symington:

• **Called "attention** again to the serious deficiencies in our continental air defense system." Since the President released $50 million appropriated for an air warning network in December, construction has been pushed in Alaska and emergency coverage established in the northeast, the Pacific northwest, and the Great Lakes area.

• **Interceptor aircraft** are deficient in their ability to stop modern bomber attacks. The latest reciprocating engine fighters do not have the required performance; and the faster turbojet fighters do not yet possess the radar essential to all-weather operations."

1950 Military Plane Procurement

An AVIATION WEEK tabulation of the 1950 military plane procurement shows the following distribution of plane orders by manufacturers and types:

Air Force

Model	Quantity	Dollar value
Boeing B-47 bomber	82	303,600,000
Convair B-36 and RB-36 bomber	47	267,800,000
Boeing C-97 transport	14	32,800,000
Douglas C-124A transport	36	84,500,000
Fairchild C-119 transport	53	40,600,000
North American F-86 fighter	111	34,400,000
F-95 fighter	155	130,900,000
Lockheed F-94 fighter	150	120,000,000
F-97 fighter	105	
Northrop F-89 fighter	64	81,800,000
Republic F-84 fighter	120	37,400,000
Lockheed T-33 trainer	125	26,900,000
Convair T-29 trainer	12	9,800,000
North American T-28 trainer	125	16,600,000
Beech T-35 trainer	3	.....
TEMCO T-34 trainer	3	.....
Grumman SA-16 rescue amphibian	11	7,800,000
Piasecki H-21 rescue helicopter	22	9,300,000
Totals	1241	$1,204,200,000

Navy Air

Chance Vought F4U-5N fighter	60	$7,800,000
Douglas F3D-2 fighter	70	30,000,000
AD attack bomber	53	8,700,000
Grumman F9F-4 fighter	242	57,100,000
AF attack bomber	50	31,100,000
Lockheed P2V patrol bomber	45	25,400,000
Martin P5M patrol bomber	5	22,300,000
McDonnell F2H fighter	140	34,500,000
North Amer. AJ attack bomber	15	12,800,000
Piasecki HUP helicopter	15	3,700,000
Totals	695	$233,400,000

Note: Air Force has announced plans to buy 1250 planes in 1950 and Navy has plans to buy 798 planes. Discrepancies between these totals and those shown above indicate that each service is still planning procurement of a small additional number of planes. Discrepancies between total dollar values and previously published reports (AVIATION WEEK April 17) are due to rounding off of figures.

Navy dollar figures above are for airframe contracts only and do not include government furnished property such as engines, propellers, etc., which are included in the totals for the Air Force contracts listed. Generally speaking, Air Force airframe contracts are slightly less than 50 percent of the figures shown for complete airplanes.

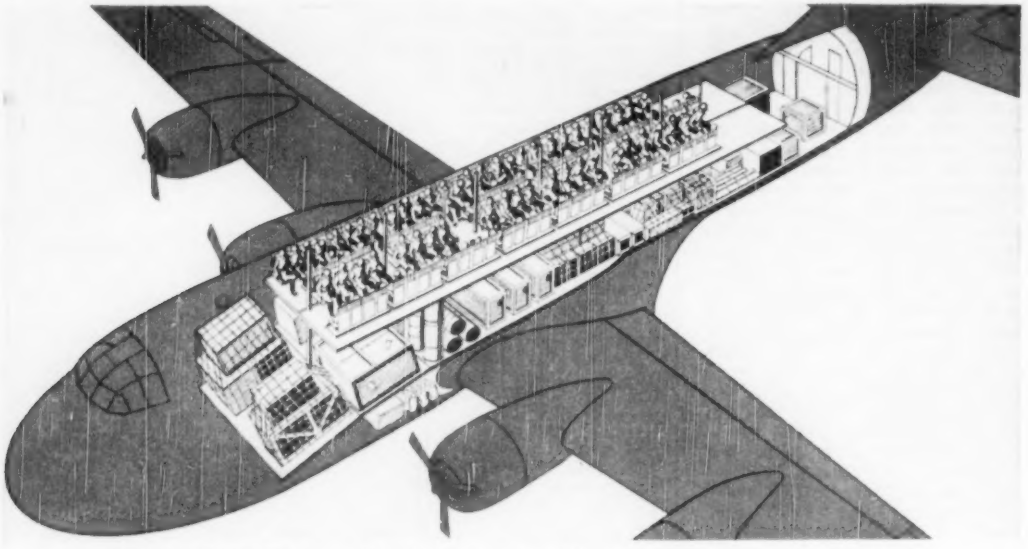
• **Guided missiles** "offer great possibilities in the field of airborne armaments to destroy enemy aircraft." Progress in air-to-air missiles has been "encouraging" and "future fighters at some stage will have such weapons as their principal armament."

There is "little justification for the hope" of security through guided missile defense. "The development of a long-range offensive guided missile, especially one launched from an airplane, is following . . . closely the developments of a short-range defense missile."

Of USAF's total of 10,250 combat planes, 8246 or more than 80 percent are World War II types which will be obsolete by the end of the 1951 fiscal year. Of USAF's total of 22,000 planes, 13,000 are in use and 9000 in storage.

An increase is urged in USAF's officer strength of 19,797. USAF's authorized officer strength of 21,734 compares with 29,289 for the Army and 54,641 for the Navy.

The Secretary of Defense has recommended that the President release $29 million so that construction on three facilities at USAF's Air Engineering Development Center in Tennessee can move forward. These are a high-altitude engine test facility, a hypersonic wind tunnel, and a supersonic propulsion wind tunnel. Of the $30 million appropriated for the project, USAF to date has spent about $1 million on planning and research for these facilities at AEDC.



DOUGLAS C-124A Globemaster II, carrying large numbers of troops and equipment, can consolidate airheads.

Air Transportability Gets a Test

'Operation Swarmer' helps AF, Navy appraise current aircraft types and guide fiscal 1951 expenditures.

By Ben S. Lee

Camp Mackall, N. C.—Behind the scenes of the huge airlift and ground support air maneuver that was Operation Swarmer, the Air Force, and to a lesser extent the Navy last week were quietly conducting a thorough requirements appraisal of their currently available fighters, light bombers and utility and transport planes.

Real significance of the operation, even more than providing a demonstration of strategic airlift, was to provide a new yardstick expected to govern largely the allocation of fiscal year 1951 procurement for Air Force and Navy Air. For performance of aircraft at Swarmer is to be used in revising factors determining combat aircraft obsolescence. And the projected revision is in response to Defense Secretary Johnson's call for new attrition timetables for all combat aircraft with the accompanying statement that he considers existing USAF-Navy planning factors for obsoleting current planes, "unrealistic."

▶ **Fighters and Bombers**—Current production fighter and attack aircraft under scrutiny of the evaluation teams at Operation Swarmer were North American F-86, Republic F-84, Lockheed F-80, RF-80, Vought F4U, F4U-5 and Douglas AD-4 and AD-5. North American four-jet B-45 was the only current light bomber aircraft under evaluation although the Douglas RB-26 bomber was used in several missions.

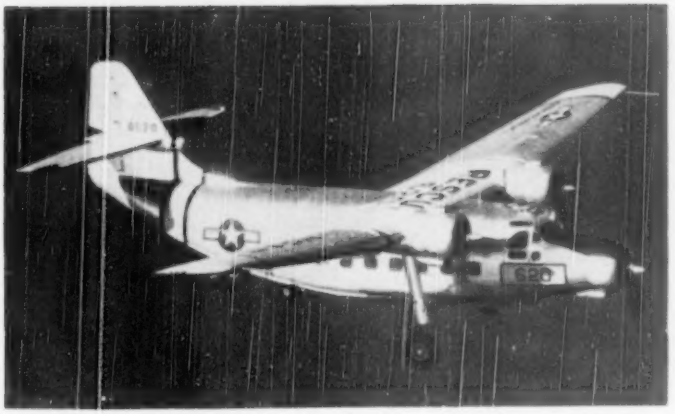
Transport aircraft used in the strategic airlift were Fairchild C-82 and C-119, Curtiss C-46, Douglas C-54 and C-74. Navy had one Lockheed P2V patrol bomber in the maneuver.

Participating in Operation Swarmer were 75 F-86 fighters, 135 F-84; 25 F-51 (National Guard); 25 F-47 (National Guard); 21 F-80; 8 F4U-5; 60 F4U; 36 AD-4; and 4 AD-5 planes. In the light bomber class there were 32 B-45s; 16 RB-26s and 1 P2V. In the transport class there were 40 C-82; 45 C-119; 51 C-46; 91 C-54 and 7 C-74 transports.

▶ **New Types**—More interesting to many Air Force and industry observers than the fairly well known performance of current types was the static display at nearby Pope AFB, N. C., of new transport and cargo planes, gliders and helicopters, some of them shown publicly for the first time including:

• **Douglas C-124A**, four-engined cargo transport developed from the C-74, now going into production for the USAF, and capable of a 50,000 lb. payload, with wide versatility of utilization. The C-124A was the biggest transport at Swarmer.

• **Northrop Raider C-125** tri-motor assault transport with 8000 lb. payload.



NORTHROP C-125 Raider, USAF's newest light transport, shown in new flight photo.

• **Four Chase Aircraft** planes including: the G-18 glider (8000-lb. payload), the G-20 glider (16,000 lb. payload) and the Assault transport versions of these gliders, the YC-122(G-18) with two Wright R-1820-76 engines, and the XC-123 (G-20) powered with two Pratt & Whitney R-2800 engines.

• **Boeing's C-97 Stratofreighter,** main competition to a C-124 for medium transports.

• **Helicopters including:** Piasecki's HRP-1 Navy Flying Banana, Sikorsky's USAF H-19 and Bell's USAF YH-12. (None of the helicopters were used operationally.)

Notably absent was the biggest cargo transport in this country, the Convair six-engined XC-99 now undergoing repairs after a ground fire accident.

Operation Swarmer was noteworthy as the first postwar problem primarily concerned with tactical application of strategic airlift. Previous postwar operations involving airlift as a phase in a bigger overall maneuver included the operation MIKI near Honolulu and the recently concluded Operation Portrex near Puerto Rico.

▶ **Problem Involved**—The problem set up by the Joint Chiefs of Staff is part of a continuing high-level training in logistical and plans technique.

Swarmer pre-supposed that aggressor forces had invaded U. S. after landings made in the vicinity of Wilmington, N. C., and that they had advanced inland towards the Winston-Salem industrial area. To repel this advance the U. S. had to establish a 26,000-man airhead in territory (near Camp Mackall, N. C.) overrun by the enemy. Problem faced by U. S. forces was getting troops to the airhead with combat equipment and then continually providing air logistical support in weapons, equipment, and food as well as evacuation for the sick and wounded.

▶ **Shuttle Operation** — Approximately 200 transports shuttled back and forth into the maneuver area delivering vital combat supplies. These craft were based at Greenville AFB, S. C., and Laurinburg-Maxton Field, N. C. Some 300 fighter, reconnaissance fighter and bombers flew continuous air cover for the transports in addition to individual interceptor missions. These craft were staged at Langley AFB, Va., Shaw AFB, S. C., and Cherry Point, N. C.

During the maneuver approximately 35,000 men, combat equipped, were transported to the North Carolina airhead and completely supplied by air. Men were moved to the airhead from staging points at Greenville and Laurinburg-Maxton bases. The first troops into the area were paratroops delivered by C-82, C-119 and C-46 aircraft. Follow-up elements were air-landed at airstrips in the airhead.

SAE Tussles With Jet Problems

Gas turbine propulsion tied in with transport factors bring record number of engineers to meeting.

More than 1000 engineers, airline executives and aviation enthusiasts attended sessions of the recent four-day National Aeronautic Meeting and aircraft engineering display held by the Society of Automotive Engineers.

Observers attributed this record registration for this type of SAE gathering to mounting interest in air transportation problems and gas turbine propulsion. These constituted the prime considerations of the convention, held in New York, Apr. 17-20.

Highlight of the meeting was the wind-up trip to New York International Airport to inspect turbojets in the U. S. military stable and witness a flight demonstration of Avro Canada's Jetliner.

▶ **Service Data**—Leading off the meeting, J. W. Bailey, Allison division service section head, stressed that service experience with turbojets has made possible overhaul cost reduction to values approaching those of conventional engines.

Anticipated troubles with the turboprop were outlined by R. N. Dorey, Rolls-Royce Ltd., in this order: Flame tubes and nozzles, nozzle guide vanes, turbine blades, bearings and air seals, gearing, air and oil joints, and making two engines "alike" (without production variations).

▶ **Trainer Hours**—Scott Flower of Pan American reviewed a year's operation of the Curtiss-Wright Dehmel flight simulator. Cost of the unit is approximately $200,000 and operating costs vary from $12 to $80 per hr. One hour of actual flight costs between $200 and $400.

Reduction in flight time required for captains and crew who were given Dehmel training was outlined as follows:

Transition from flying boats to Constellations where only flight training was used required an average of 12.6 hr. per pilot or 25.2 hr. per crew.

Transition to the Boeing 377, was 4 hr. actual flight time for the captain or 8 hr. per crew.

Present PAA system standard for transition training solely on aircraft is 10.5 hr.

▶ **Jet Transport Views**—Jet airliners will have to operate profitably to be attractive to the airlines, said United Air Lines' H. E. Nourse. While jets will appeal to the public because of their high speed and comfort (reduced noise and vibration), their dependability and safety are relatively unknown factors which will bear intensive study. He estimated the potential traffic for jet transports at from 3 to 6 billion revenue passenger miles annually, which would require from 90 to 180 airplanes.

▶ **Copter Role**—M. D. Warshaw of TWA advocated establishment of centralized airports, served by fast-flying jet planes as an essential element to expedite passenger handling. "Micro-haul equipment," such as 20-passenger copters could be used for shuttles from these airports to business districts, home communities or secondary cities, while 40-passenger, 500-mph. turboprop

craft could carry passengers between primary cities and the centralized airports.

To reduce airport congestion, Warshaw suggested that the majority of passenger flights be scheduled during popular daylight hours and cargo flights during the night.

Presenting the case for the turbojet, Avro Canada's W. Boyd advanced the theory that the public will gladly pay premium fare for the great increase in speed and comfort the jet transport would afford. He offered the premise that the turbojet engine alone is adequate for high-speed, luxurious travel over great distances. The major problem to be overcome, he said, to make the gas turbine engine attractive to commercial operators is its "prolific thirst for fuel."

Charles Froesch, of Eastern Air Lines asked: "As the tendency is towards the use of a separate gas turbine for auxiliary power and starting, why not use it to drive the airplane to the end of the runway and perhaps use it in landing for wheel pre-rotation, particularly with large aircraft."

Froesch summarized the problems of introducing jet aircraft into commercial use as follows: Reduction of fuel consumption for the turbojet; air traffic control; operating knowledge of jet engines and aircraft, and finding the capital to do it.

▶ **Prop Aspects**—R. Dixon Speas, American Airlines, commented that the numerous propeller failures experienced on Constellations, DC-6s and Boeing 377s left much to be desired in the way of prop reliability. The reliability experienced on the older DC-3s and DC-4s must be redeemed if the turboprop is to be an acceptable propulsive unit.

In rebuttal it was stated that a majority of the piston-engine-propeller problems arose from vibratory stresses induced in the propeller by torque variations and uneven power application due to sparkplugs, and even whole cylinders, being out. The turboprop's smooth power curve will eliminate this problem. And because of troubles encountered with the reciprocating engine, good safety factors have been built in to existing propellers insuring acceptance for turboprop application.

▶ **British Custom**—G. Geoffrey Smith, M.B.E., hinted that the British were so well advanced in the development of jet engines because they originally had entrusted their development to well-established aircraft engine manufacturers with intimate knowledge of installation problems and experience with power units at high speeds and altitudes. On the other hand, he observed, jet engine manufacture in the U. S. initially was given to steam turbine builders. He suggested experimental installation of the most advanced British turbines in equally advanced U. S. airframes.

▶ **Ground Problems, Control**—Impact of high-speed flying upon the public will be largely lost, stated R. L. Turner of EAL, unless ground delays such as long trips to airports and lengthy waiting periods for baggage are streamlined.

A discussion between American Airlines and General Electric representatives highlighted jet ground operation problems.

Jets will have to be parked 100 to 150 ft. apart to avoid damage during warmup, and provisions must be made to lessen engine noise and deflect the blast upward.

J. G. Borger, PAA, and R. B. Rogers, Westinghouse, agreed that the initial overhaul periods of jet engines would be in the neighborhood of 500 hours. It is reasonable to expect a 1000-hr. overhaul period in 3 to 5 years, a considerable increase in flight distance over current piston engines.

▶ **Military View**—Maj. Gen. Laurence S. Kuter, USAF, discussing the transport plane as related to future military plans, cited the deficit of civil transports useful for military service and noted a serious shortage of navigators and radio operators within the airlines.

He also voiced his personal conviction with respect to the "prototype bill" that the greatest requirement is legislation, either positive or negative, to remove the uncertainty that has existed for the past three years.

▶ **Wright Eulogy, Jet Show**—In a panel discussion devoted to the work of the Wright Brothers, John Hopkins' Francis Clauser and General Motors Inland Mfg. division's M. P. Baker related achievements showing that these famed pioneers were "pretty sound aeronautical engineers." Republic Aviation's Alexander Kartveli observed that the Wright brothers' craft "was the true prototype of today's plane." Opie Chenoweth, USAF powerplant lab, pointed out the progressive thinking in their engine developments.

The Jetliner flight demonstration, climaxing the meeting, was an impressive exhibit. Takeoff run was relatively short. After a low-level pass over the field, there was a steep climb at about 6000 fpm. An unusually short-radius turn was made at a sharp angle of bank. Landing roll appeared extremely short.

Finletter Sworn in As Air Secretary

As the Air Force changed secretaries last week, chances for bolstering the nation's declining air power appeared better than they have since the Truman-Johnson defense budget slashing began a year ago. (See Congressional Air Power story).

Thomas K. Finletter, New York Attorney, was sworn in as the second Secretary of the Air Force, succeeding W. Stuart Symington, who moved over, later in the same week, to become chairman of the National Security Resources Board.

Symington gave a last warning in his final Air Force news conference that "effectiveness" of the Air Force has declined in the last six months because of reduction in numbers, although its "efficiency" has increased.

While still holding to his "support" of the President's 48-group Air Force "without reservation" for budgetary reasons, Symington added that he did not see how a balanced budget could be achieved with the world conditions in their present state, in which arms and other security expenditures must continue on a large scale.

He sees allocation of manpower as the No. 1 problem of his new job.

Secretary Finletter was sworn in by Defense Secretary Louis Johnson in the presence of Mrs. Finletter, the Joint Chiefs of Staff, retiring Secretary Symington and other high Defense Department officials.

Washington reports have indicated that Finletter has accepted the 48-group Air Force program, as a practical reality but he is expected to be heard on the question of the present status, which is dropping well below the 48 group-level in terms of modern planes.

Ceremonies at the Pentagon last week also marked the departure of Arthur S. Barrows as undersecretary of the Air Force. Undersecretary Barrows, Chicago business man who is credited with putting the Air Force procurement on a more business-like operation, received the Air Force Exceptional Service award from Secretary Symington on occasion of his retirement.

His place had not yet been filled at AVIATION WEEK presstime. Late Washington reports indicated that John A. McCone, West Coast manufacturer, who had served with Finletter on the President's Air Policy Commission, probably would not accept the undersecretary post. McCone had previously been favored for this position.

Truman Accepts Whitney Resignation

President Truman last week accepted resignation of Cornelius V. Whitney as undersecretary of commerce, which had been submitted since Jan. 25.

George Burgess, former CAA deputy administrator, has taken over his new duties as loan officer with the International Bank for reconstruction and development, in Washington.

EATON VALVE DEVELOPMENT has Contributed to Higher Efficiency and Longer Life for Engines in Every Type of Service

Since the first automotive valves were introduced by this organization in 1911, it has been Eaton's objective to produce valves which would meet the requirements of constantly increasing engine speeds and extreme operating temperatures. Eaton's development of the sodium cooled valve in 1923 represents one of the most important single advancements in the history of aviation. Applying the sodium cooled principle to automotive use, Eaton is contributing thousands of miles of additional life to valves in heavy duty truck and bus service. Equally important advancements have been made in valves for passenger car use—valves which deliver a hundred thousand miles and more of dependable service.

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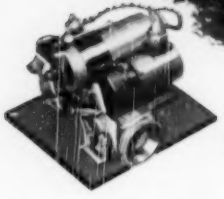

Hitching your wagon to a Star

. . . isn't so far-fetched nowadays. Jets are ramming into the stratosphere at unprecedented speeds and the ceiling is definitely unlimited. PAC's master pneumatic brain is the nerve center of a vital pressure schedule system which functions automatically. Research and development engineers at PAC are constantly at work to make equipment more efficient . . . lives safer.

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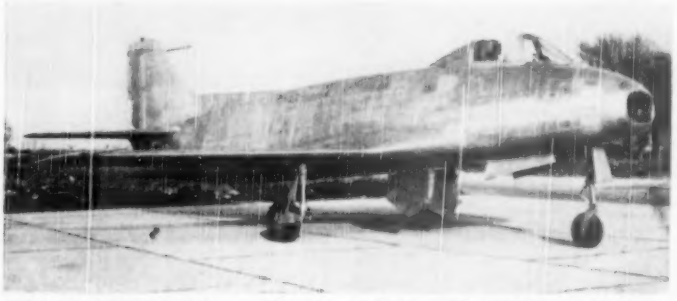
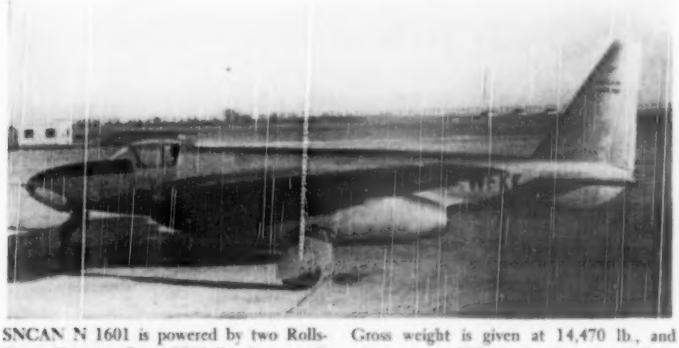
AEROCENTER NC 1080, powered by a Hispano-Nene turbojet, is one of the latest French jet fighters to undergo trials. Designed for carrier use, the craft somewhat resembles the Supermarine 510. Noteworthy are the long double-unit flaps, shown extended, and the sideplates on the horizontal tail. A pilot ejection seat apparently is fitted. Wings and tail are sweptback.

New Foreign Planes Being Developed



SNCAN N 2200 is another new French carrier-based fighter powered by a Hispano-Nene. It is credited with a top speed of 570 mph. at sea level, cruises at 550 at 15,000 ft., and has 4500-fpm. climb. Service ceiling is given as 36,000 ft. Gross weight is 17,650 lb., empty weight 10,650 lb. Span is 39 ft., length 44 ft., and height is 11.8 ft.



SNCAN N 1601 is powered by two Rolls-Royce Derwent 5s at 3500 lb. thrust each and is stated to have top speed of 620 mph. Gross weight is given at 14,470 lb., and wing area as 325 sq. ft. Span is 40.7 ft. Note small wheel fitted beneath the tail.

The four military and seven civil aircraft pictured on these pages give evidence that foreign designers are very busy at getting new planes into the air in spite of the restless political and economic situations still prevalent abroad.

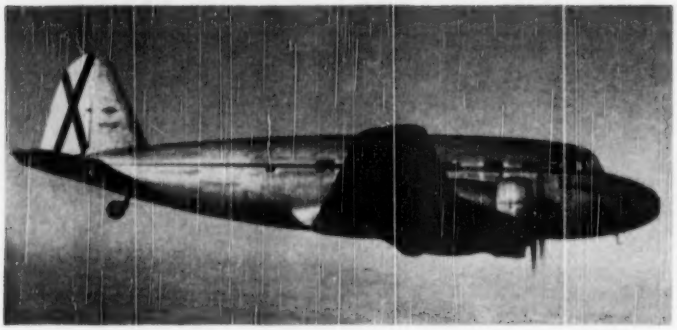
► **New French Types**—The French have built a large twin-engine gull-wing military amphibian, the SNCAN N 1400 series weighing about 41,000 lb., with a span of 104 ft. A new trainer is the Morane-Saulnier MS 472 two-placer powered by a Gnome Rhone of 650 hp. Top speed is 293 at 6000 ft., gross weight is 5240 lb., empty weight is 4320 lb., and normal range 950 mi. Fuel capacity is 108 gal. Landing gear is conventional tailwheel type. The air force has ordered 500.

A recent four-place Czech personal plane is the Bonzo M3, powered by a 160 hp. Walter Minor. Top speed is about 165 mph., range is 621 mi. Gross flying weight is 2420 lb. Tricycle retractable landing gear is used. Construction is all-wood.

SIAI-Marchetti is planning a four-engine twin tail-boom transport of similar configuration to the Fairchild XC-120. However it is not clear whether the lower main cabin is to be detachable.

The Santangelo Orsa is an all-metal 26-place low-wing transport powered by two Isotta-Fraschini engines of about 800 hp. each. Top speed is given as 260 mph. Retractable tricycle gear is fitted. The nose is noteworthy for large transparent area. Big double passenger-cargo doors are used.

New Foreign Planes . . .

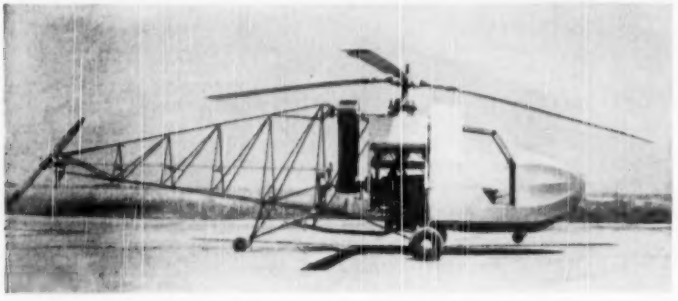


SPAIN

CASA 201 ALCOTAN is a 10-12 place transport (including crew of 2) powered by two 380-hp. Armstrong-Siddeley Cheetah engines giving the craft a top speed of 202 mph. at 4000 ft. A later version is to have Spanish Elizalde Sirio engines of 450 hp. each, giving the plane a maximum speed of 220 mph. at 6600 ft. Gross weight of the Cheetah version is 11,255 lb., range is 621 mi. Span is 60 ft. 5 in., length 45 ft. 3 7/8 in., height 13 ft. Wing area is 450 sq. ft. Construction is conventional all-metal, with fuselage built in three sections. Ailerons, rudder and elevators are fabric covered.

NORWAY

FINNMARK 5A is a 12-passenger amphibian recently built by Norsk Flyindustri. Powered by two Pratt & Whitney R-1340s of 600 hp. ea., the craft is stated to have a maximum speed of 190 mph., and cruising speed of 156 mph. at 65 percent power. Cruising range fully loaded is 562 mi.; with nine passengers it is 815 mi. Span is 55 ft. 9 in., length 43 ft. 7 in. Service ceiling is 19,685 ft., and landing speed is 65 mph. Retractable landing gear fits into the sponsons. With gear and sponsons removed, wing tip floats may be fitted for flying boat operations.

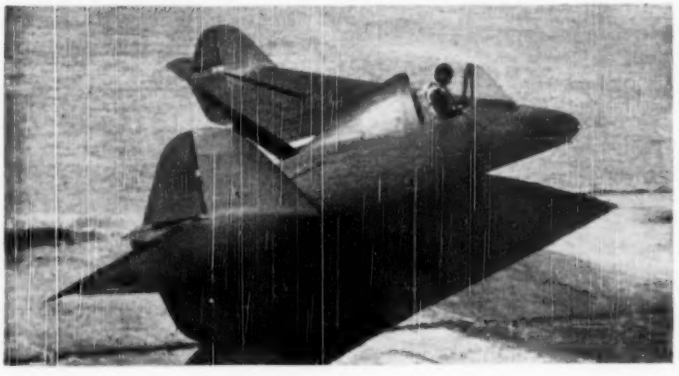


CANADA

PICKEN HELICON, designed by H. B. Picken and associates of Hamilton, Ontario, is powered by a 140-hp. DH Gipsy Major engine. It appears that the craft seats two, and the designer states that it is primarily a flying test bed to study a floating or tilting rotor head of his own configuration. Initial tests are said to be proving the design to be sound, and the group plans to incorporate this type rotor, with certain modifications, to a newer copter design having increased power.

TURKEY

T.H.K. 13 is an experimental single-seat tailless glider constructed by the Turkish Aircraft Factory. The craft is of wood and fabric and has a wingspan of about 66 ft. with wing area of 430 sq. ft. Height is given as 6 ft. 4 in., and gross weight is stated to be 1012 lb. Slotted ailerons and flaps are fitted to the sharply swept wings. The T.H.K. 13 is being used as a flying research model to gain data for a proposed twin-engine plane to be fitted with 130-hp. DH Gipsy Major engines. The company's factory was built in 1941 by the Turkish Air League and employs about 1200. It has built several types of light planes and gliders and also overhauls aircraft and engines.



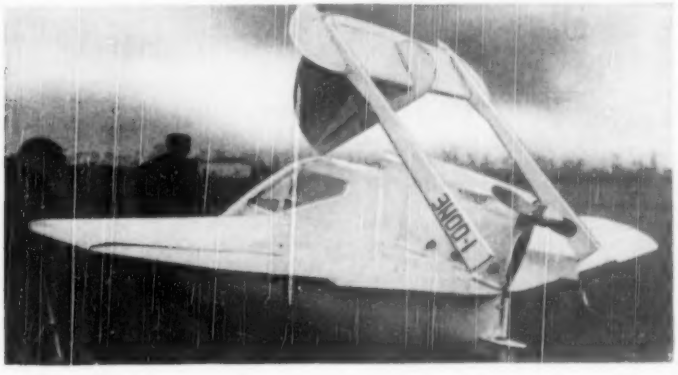
FRANCE

SNCASE SE 4000 is a 4-6 place design powered by a 450 hp. Mathis turning a three-blade reversible pitch eight-foot prop. Estimated top speed is given as 158 mph., cruising speed as 150 mph. at 15,000 ft. Gross weight is 6100 lb., empty weight 4300 lb. Span will be 54 ft., length 37 ft., and overall height 13 ft. Wing area including ailerons is 334.05 sq. ft. Landing gear is retractable tricycle type. Range fully loaded is said to be 620 mi. Engine planned as pusher installation. There is a nose access door for loading of stretchers. Flaps are of split type and can be depressed 40 deg. Fuel tanks are in leading edge of wings. Now undergoing tests is the . . .

SNCAN N 2500, a new military transport with two SNECMA 14R engines of 1600 takeoff hp. each, giving the plane a top speed of 255 mph. at 9000 ft., cruising speed of 220 at 10,000 ft. Normal range is 950 mi. Gross weight is 40,000 lb., empty weight 25,500 lb. Span is 106 ft., length 66 ft., and overall height 19 ft. Total wing area is 929 sq. ft. Fuel capacity is 440 gal. Crew is five, cargo capacity is given as 1590 cu. ft. Sea level climb on one engine is 195 fpm. N 2500 bears strong resemblance to Fairchild Packet. Main landing gear is interchangeable. Rear of fuselage splits vertically to admit cargo. Has built-in ramp.

CZECHOSLOVAKIA

SOKOL M1D is a three-place personal plane powered by 105 hp. Walter Minor 4-111, giving the craft 150-mph. top speed, and 132-mph. cruising speed. Fuel consumption is given as 5.37 gal. hr., and range as 620 mi. Construction is of wood, covered with plywood and fabric. Main landing gear retracts straight back into the wings, the tailwheel is fixed. Landing speed is 46.6 mph. (with flaps), initial rate of climb 590 fpm., takeoff run (with flaps) 208 yd., landing run (flaps and brakes) 185 yd.



ITALY

ALAPARMA 65 BALDO is a tiny two-placer powered by a 65-hp. Walter Mikron and having hinged tail-booms to facilitate storage. Gross weight is 950 lb., empty weight 510 lb., and span is only 23 ft. Top speed is stated to be 137 mph., cruising 117 mph., and minimum speed 40 mph. Range at economical cruising speed is 560 mi., takeoff distance 330 ft., landing distance 300 ft. The craft is stated to climb to 3278 ft. in five minutes. A monoped main landing gear is fitted. Ground stability is provided by means of a skid under each wing tip. Carrying only a pilot this craft is stated to be fully aerobatic. Construction is all-wood.

Businesses that grow need the go of a Beechcraft

You make more calls when you cruise at a 170-mile clip. No wasted time, no wasted effort. Travel *means* more! Minutes in the air pay you back with hours of productive time.

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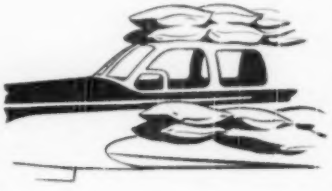
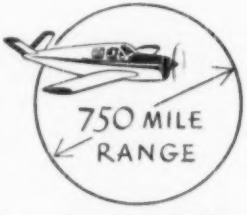
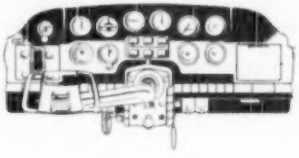


You travel in safety. The B-35 Beechcraft Bonanza is extra rugged, withstanding shock and stress tests far surpassing CAA requirements. All-metal construction.

You get top performance. Flight characteristics make it exceptionally easy to handle. Speed, range and fuel economy unexcelled! Wide, sturdy landing gear smooths out short, rough-field landings.



You get amazing efficiency. At cruising, the Beechcraft Bonanza uses only 56% of the engine's rated take-off horsepower! And fuel consumption is low—amounting to only 9.5 gallons per hour!



You enjoy many extra features. For instance, a functionally designed instrument panel, highly efficient . . . but handsome, too! Touches of luxurious comfort everywhere—even to coat hangers, ash trays, map pockets!

Get all the facts! There are hundreds more . . . about the extra advantages of the new Model B-35 Beechcraft Bonanza. Check with your nearest Beechcraft distributor or dealer, or write for complete information on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles
Fuel economy, 9.5 gph

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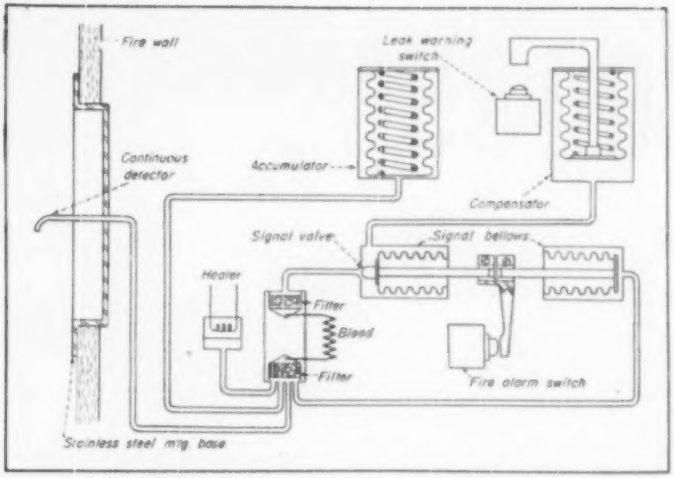


DITTMAN CONTINUOUS TYPE fire detection system shown in schematic layout.

Continuous Tube Fire Detector

Unit employs Cymene which vaporizes when heated and activates alarm. Price is about $150 per zone.

A new continuous tube fire detector system, utilizing liquid and vapor in its operation, has been developed by the Dittman Corp., 280 Madison Ave., New York City. The unit acts on rapid rate of rise and fixed temperature principles, and is designed to be adaptable to locations where either low or high ambient temperatures are common.

Cost of the Dittman system is estimated at $150 per zone, plus installation. It is being evaluated by the USAF at Wright Field and is also being studied by several major airlines. The device has received CAA approval (TSO C11) and meets specification AS-401A.

▶**Makeup**—Units making up the detection system are: A continuous detector tubing up to 30 ft. long fabricated of .08 in. dia. Inconel; an ambient temperature compensator; a system pressure compensator; signal bellows; accumulator; and two Micro Switches. Except the tubing, all units are mounted on a circular stainless steel base and are protected from contamination by foreign material by means of a cup having rubber seals.

The entire system contains approximately .6 cu. in. of Cymene, a volatile non-toxic hydrocarbon, kept under constant pressure by the system pressure compensator. This pressure prevents false alarms due to altitude changes, changes the vapor pressure of the fluid and keeps it relatively stable at high ambient temperatures. It also makes possible testing of the entire system. Under normal temperature changes of —65 F through the highest desired normal ambient temperature, the ambient temperature compensator automatically prevents false alarms.

The detector portion of the apparatus is designed to respond to a minimum flame of one inch. Weight of the system, using a 25 ft. tube, is 2¼ lb.

▶**Operation**—During fire or test, the Cymene in the continuous detector vaporizes rapidly, and the increased volume and pressure activates the ambient temperature compensator closing the fire alarm Micro Switch by means of a signal bellows. If the vapor pressure should become excessive due to a fire above one inch, the additional pressure will be accepted in the pressure accumulator. As the fire is extinguished and temperature falls, the accumulator will return fluid to the system, thus automatically resetting the detector should additional fires occur.

Dittman says the system was subjected to approximately 75 fires during a series of trials before it failed to function.

▶**Test**—For testing the system a switch can activate a small built-in heater to simulate a fire condition equal to approximately a one-inch flame. The alarm light will show "fire" as long as the test switch is closed.

If for some reason the system should be damaged, allowing the liquid to escape, a separate monitoring system will open the fire alarm circuit and close the warning light circuit, indicating system failure.

Joint Group Studies Noise Suppression

Industry and government are quietly working out a program to bring more quiet to people living near engine test facilities and airports.

At a closed meeting in Los Angeles sponsored by the Air Materiel Command, airframe companies, National Advisory Committee for Aeronautics and AMC decided to pool their research on noise suppression and form a joint organization to evaluate noise suppression devices.

The LA conference grew out of a recent tour of aircraft companies by Brig. Gen. A. H. Johnson, chief of the industrial planning division of AMC. He found airframe and engine people more worried than ever about the noise control problem that has been plaguing them for several years.

Discussions centered around technical aspects of design and construction of sound-dampening engine cells; noise levels in the vicinity of airports; difficulties of designing and building sound cells for engine run-ups prior to actual takeoff.

▶**Health Hazard**—Acro-medical aspects of noise were discussed by Dr. Horace O. Parrack, chief of the Bio-acoustic Unit of the Acro Medical Laboratory, AMC. He pointed out that the higher velocity noises of jet engines have not increased the hazard of deafness to workers, but that the hazard of neuro-psychiatric discords has become much more acute.

Dr. Parrack said protection of employes and service personnel around aircraft, and of persons living near airports is the major concern of AMC in the noise problem.

Workers can be protected somewhat by fabrication of ear-muffs and other devices, he said. Protection of others in the vicinity should come about through installation of mufflers or silencers on aircraft running up high-powered engines.

▶**Silencing Cells**—Airframe representatives agreed protection of workers is important. But looking ahead to the days of jet transports, they pressed for improved silencing of engine cells. One manufacturer gave his reason why there's a present need for silencing reciprocating engines: "People call our company at night to complain about our jet ships waking them up. But it's just the airliners turning up at the airport."

He pointed out that with new subdivisions concentrating on the cheap land around airports, the airport is now in the center of the community and no longer on the outskirts of town.

NAVION UTILITY 205

Big—Rugged—Fast—Easy-to-Fly Safely—A Navion through and through

HERE'S THE MOST terrific value in aviation today ...a tough 'n rugged 205 horsepower *Navion* for *only* $9485. A complete, well equipped plane, built for hard work. It's especially designed for business men, ranchers, contractors, oil men, star mail route operators and others who want modern, safe, fast air transportation at minimum cost. It features the same all-metal ruggedness as more expensive models... the same safety and ease-of-flying... the same VHF radio... the same kind of sensational performance on short, rough or muddy fields... *plus* large cargo space and greater payload. If an "air workhorse" can help you in *your* business, see the *Navion* Utility 205!

Ryan Navion

NO OTHER PLANE COMBINES SO MANY FEATURES SO WELL

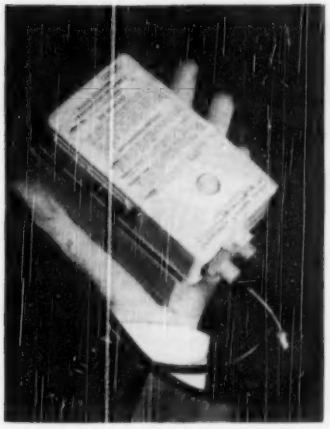
IT'S EASY FOR ANYONE TO FLY A *NAVION* SAFELY! AND THERE'S A *NAVION* FOR EVERYONE!

NAVION UTILITY 205. Features the proven *Navion* airframe and 205 hp Continental engine. Equipped with all essential accessories; others available at extra cost. 1029-lb. payload with full tanks, 55 cu. ft. cargo space.

NAVION DELUXE 205. New, refined 1950 version of the plane that's made safe-flying history! In three striking new colors. Features new adjustable cowl flaps and cylinder-head temperature gauge, and more efficient radio antennae.

NAVION SUPER 260. Lycoming-powered 260 hp. Cruises at an honest 170 mph. Takes off in 400 ft., climbs 1250 fpm. Has a service ceiling of 18,000 ft. Lands *under* 55 mph. Write today for more information on any or all new *Navions*.

Rely on Ryan RYAN AERONAUTICAL COMPANY, 405 LINDBERGH FIELD, SAN DIEGO, CALIFORNIA



"PINT-SIZE" DISTRESS RADIO

Successor to the "Gibson Girl" air-sea rescue radio may be this small transmitter-receiver recently developed under direction of Air Materiel Command. Designated URC-4 and weighing only 6 lb.—including battery which fits in man's pocket—new radio is designed to do a better job at less weight than the 35-lb. set familiar to combat pilots of World War II. Device operates on VHF or UHF channels and transmits or receives both voice or code messages—compared to single distress signal put out by Gibson Girl. While many feet of antenna on "GG" have to be launched with kite or balloon, new unit has collapsible car-type antenna. Test already have shown it to be capable of maintaining constant contact with an aircraft 80 mi. away. This completely waterproof, radio will operate after immersion in salt water and is designed to withstand temperatures from −50 to 160 F. Mercury battery powering set is designed to resist deterioration from non-use or age. Maker, Hoffman Radio Corp., Los Angeles, reportedly has asked FCC to license unit for airline use.

Brush Life Increased By Vapor Injection

New methods of lubricating graphite brushes used in electrical equipment, which promise to increase the life of these parts many thousands of times, have been developed by an engineer in General Electric Co.'s research laboratory in Schenectady, N. Y.

Studies by Robert H. Savage have revealed that graphite is not a good lubricant in itself as it was previously supposed. This solid and "slippery" material consists of layers of atoms which slide easily over each other, and it was formerly thought that this property was inherent in the graphite alone, GE says.

Savage has shown, however, that an invisibly thin film of moisture on the graphite is required for its lubrication. This has presented no problem where electrical equipment is used on or near the ground, since there generally is sufficient water vapor in the surrounding air to do the job.

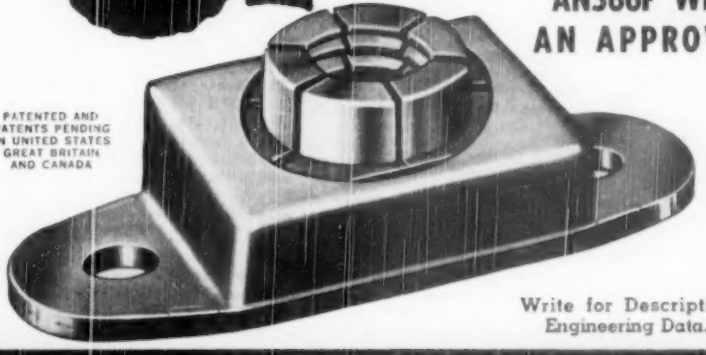
But this does not hold true with electrical equipment used in aircraft flying at extremely high altitudes in rarefied air at such low temperatures that water vapor is almost completely absent, according to GE.

Various methods of treating brushes

The NEW NUTT-SHEL
FLOATING TYPE SELF-LOCKING NUT

Here it is!

30% WEIGHT SAVING
AN366F WIDTH
AN APPROVED



PATENTED AND PATENTS PENDING IN UNITED STATES GREAT BRITAIN AND CANADA

THE new "Nutt-Shel" Floating Plate Nut has the same dimensions as AN366F and AN362F Stationary Plate Nut.

Float approximately 1/32" from center in all directions.

This all metal plate nut is manufactured to comply with requirements of specifications AN-N-5 and AN-N-10 and may be used at temperatures up to 550° F. with high axial load.

Write for Descriptive Engineering Data.

NUTT-SHEL COMPANY
317 EAST SECOND ST. LOS ANGELES 12, CALIF.

An Important Announcement Concerning

The BARTOW LIGHTING SYSTEM for Airport runways and landing systems

by THE WELSBACH CORPORATION

THE BARTOW SYSTEM

The Bartow Lighting System for airport runways and landing systems, making possible the landing and take-off of aircraft under a wider range of visibility conditions, was developed and perfected by John B. Bartow, the pioneer in this field. It permits the use of higher candle-power without glare and halation, thus giving to the pilot increased cockpit visibility of the runway outline in perspective. The system is patented under U. S. Letters Patent No. 2,155,295 and has the approval of the Civil Aeronautics Administration. The system includes a series of light units outlining the runway, equally spaced at intervals of from 100 ft. to 200 ft., depending on the type of unit and the visibility conditions being prepared for. The candle-power distribution of the light unit has a relative high candle-power directed beam towards the glide path, with beams fanning therefrom of gradually decreasing intensity in order to distribute the light in such a way that the light reaching the eye of the pilot, from all the lights that may be visible to him at any time, is substantially the same as he approaches the runway for landing.

The System has been in use since 1939. During the war it proved its worth consistently in such places of extreme weather conditions as Newfoundland, the Aleutians and other locations where the armed forces installed more than 35,000 high intensity units.

The System has been a major factor in maintaining the dramatically effective Berlin airlift, and it is today installed on many of the principal airports of the world, and more systems are going into operation each month. It has the enthusiastic endorsement of airline pilots, airlines and aeronautical experts everywhere.

The Systems are of three types, *(1) High Intensity, (2) Medium Intensity, and (3) Low Intensity, essentially differing only as to intensity of the light to meet varying needs.*

The High Intensity System uses a light of minimum candle power of 20,000 and some units are capable of producing more than 150,000 candle power. It is designed primarily for low visibility conditions. This System permits landings to be made under extreme bad weather conditions both day and night and will keep your airport open and available for safe landings during many hours when it would otherwise be closed because of weather conditions. For example, successful landings have consistently been made in fog conditions where object visibility was less than ¼ mile using a high intensity lighting system in conjunction with ILS and approach lighting.

The variation control of the high intensity lighting systems to be installed should depend on the varying visibility conditions to be prepared for. There are principally two methods of varying the brightness of the lights to compensate for varying visibility conditions. First, by setting the brightness of lamp filaments; second, by refocusing or redirecting the high intensity part of the beam in relation to the glide path. The combination of these methods permits the use of still higher candle-power beams as it can be adjusted and redirected at the most suitable combination, thus permitting more efficient operation, giving the pilot maximum cockpit visibility, during a greater variation of visibility conditions without glare or halation. Some commercially available lighting units are equipped for both methods of control. Both methods are remotely controlled from the tower.

The Medium Intensity System is less expensive to install and is less effective during low visibility conditions. It is primarily designed for situations where visibility conditions are generally never worse than moderately bad, and uses lights which produce a minimum of 1,500 candle power. It has been used for landings in moderately bad weather such as rain and light snow.

The Low Intensity System is effective only at night in situations where visibility conditions are generally good and uses lights which produce a maximum of 1,500 candle power.

Responsibility of the Airport

The first responsibility of every airport operator is to provide safe, dependable service for the community, the traveling public, the commercial airlines and other fliers.

Closed Airports Mean Lost Dollars

Closed airports mean cancelled flights and by-passed landings. Stacking of planes means delays in take-offs and landings. These add up to lost revenue and dissatisfied passengers. Loss of life in a single accident at your airport cannot be evaluated in dollars. But damaged reputations and loss of good will represent substantial sums.

A High Intensity Lighting System Will Keep Your Airport Open

The installation of a High Intensity Lighting System at your airport is a "must" from the standpoint of safety. *It will eliminate more than 90 per cent of the losses caused by cancellations and delays due to visibility conditions.*

Electronic instrument approach systems are highly effective to bring an aircraft to a position from which a landing can be made, but to bring the ship in safely from the last 100 feet of altitude in bad weather or at night requires visual reference to the ground.

No electronic instrument landing system yet developed gives the pilot the instantaneous reaction which he must use when actually putting the wheels on the ground, and this is absolutely necessary for safe landings under conditions of restricted visibility. Good lights are essential for this purpose, and a Bartow System is the best yet devised.

The Welsbach Corporation

This corporation has been in the Lighting Maintenance field for over 75 years but is not a manufacturer or dealer in the equipment comprising this System. It is the exclusive licensee under the Bartow patents and its principal business in connection with airport lighting is to provide consulting engineering service to airports installing such a System and to administer the patent covering the System. It is prepared to install the Systems where local conditions make it advisable to do so or when requested by the airport authorities to bid on an installation.

The Welsbach Corporation retains exclusive use of the services of Mr. Bartow and of the staff of his company, Bartow Beacons, Inc. These experts are available for consulting purposes, for a moderate fee, to assist in the layout and design and to supervise installation and adjustment of the System bearing his name.

We also are prepared to offer proposals for maintenance and repair of the System after it is installed.

Manufacturers and Distributors of Equipment for the System

Principal manufacturers and distributors of the component parts of the System are:

Crouse-Hinds Company,
Syracuse, N. Y.

General Electric Company,
Schenectady, N. Y.

Line Material Company,
East Stroudsburg, Pa.

Revere Electric and Manufacturing Company, Chicago, Illinois

Westinghouse Electric Corporation,
Pittsburgh, Pa.

These manufacturers publish catalogs describing their equipment and have factory representatives available for consultation on cost and technical details.

Technical Information

Complete technical information can be obtained from our representatives who will call on you at your request and from the Lighting Division of the Civil Aeronautics Authority, from your own state aeronautics departments or from the manufacturers and distributors listed herein.

Patents

All runway lighting systems and landing systems using the principles described here are patented under U. S. Letters Patent No. 2,155,295 issued to John B. Bartow April 18, 1939. The Welsbach Corporation has the exclusive right under this patent to grant licenses for installation and use of these systems.

Low and Medium Intensity Systems

Royalty-free licenses are granted by The Welsbach Corporation upon request for the installation and use of low and medium intensity systems. Any system is a low or medium intensity system when no light in the system, excluding threshold lights, is capable of emitting without color correction a light in excess of 10,000 candle power. Threshold lights are a series of lights at either end of the runway in a line perpendicular to the axis of the runway.

High Intensity Systems

Any system containing a light, other than threshold lights, capable of emitting without color correction a light in excess of 10,000 candle power is a high intensity system, and *a license must be obtained and a royalty paid before installing and using such a system.* Lighting units meeting CAA Specifications L-818, L-819 and L-820 are high intensity lights.

License Fee

The uniform fee for installation and use of such high intensity systems on any airport in the United States and its possessions is twenty-six (26¢) cents per running foot of runway, measured from the position of the first light of the System to the last light of the System.

Standard License

Standard forms of license are available without obligation from The Welsbach Corporation, upon request.

How to Obtain a License

A standard license can be obtained by the airport owner, operator or lessee, or by the contractor installing the System.

A license to the contractor automatically gives the airport the right to use the System when installed, and the airport receives a printed form of license agreement.

Application by Airport

When the airport authorities desire to obtain a license directly, application should be made on forms provided by the corporation. A sample application form is available upon request.

Application should be made at least two weeks before specifications for the System are released to bidders.

Application by Contractor

Bidding specifications can require that the contractor obtain a license for installation and use of the System and that cost of the license be set forth separately or included in the installation bid. A sample form of application for license by a contractor will be provided by The Welsbach Corporation.

Bidding Instructions and Contract Provisions

For your convenience, suggested forms for bidding instructions and contract provisions and related documents are available. They will be sent promptly to interested parties by The Welsbach Corporation.

THE WELSBACH CORPORATION

EXCLUSIVE LICENSEE UNDER BARTOW PATENTS

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NAS INTERNAL WRENCHING LOCK NUT

... a superior safety nut. Sizes from #8 to 1".

NAS INTERNAL WRENCHING AIRCRAFT BOLTS

... are made to latest NAS Specifications. Threads are fully formed by rolling after heat treatment, an important UNBRAKO feature. Full range of standard sizes.

FLEXLOC

EXTERNAL WRENCHING NUTS

... incorporate the famous FLEXLOC self-locking principle and one-piece, all-metal construction. The exceptional reliability of this construction has been proved by the millions of FLEXLOCS used in the aircraft industry.

Other outstanding advantages include:

Maximum tensile with minimum weight

Approved under latest NAS Specifications

Large bearing surface

Positive self-locking—"won't shake loose"

Temperature range to +550° F.

No special tools needed—use standard 12-point socket or box wrenches. Designed for use in cramped quarters

Sizes from ¼" to ¾" NF Thread Series

Send for samples and information.

FLEXLOC

ONE-PIECE SELF-LOCKING NUTS

The one-piece FLEXLOC is both a stop and a lock nut, due to its resilient segments which lock *positively*, even under extreme vibration. Torque is unusually uniform—within a few inch pounds. "Thin" and "regular" types; NC and NF threads. Officially approved by many U. S. depts., bureaus, etc., and CAA for aircraft use.

Write for further information on these* UNBRAKO *and* FLEXLOC *Products.

SPS STANDARD PRESSED STEEL CO.

JENKINTOWN 28, PENNSYLVANIA

chemically to prolong their lives has been tried, but further improvement is needed, the firm states.

Savage's approach to this problem has been to devise a means of shielding those parts of the electrical equipment where brushes are used and supplying water vapor to the space around them.

In tests, he has shown that brushes which ordinarily would have worn out in an hour without water vapor, will last from 2000-8000 hr. with his development.

These findings are enhanced by the fact that certain organic vapors are up to 1000 times more effective than water, so that extremely small concentrations could be used to provide lubrication.

Further developments are being carried out to apply Savage's findings to actual aircraft "where the wide range of operating conditions impose some problems that have to be solved. The practical merits of equipment with shielded parts are undergoing evaluation in comparison with equipment using chemically treated brushes," the firm states.

Computer Refinement

A new development which brings the computer closer to duplicating the functions of the human brain has been announced by the Bell Telephone Laboratories, New York.

A way has been found by a Bell scientist to enable a computer not only to detect its own mistakes, but to correct them.

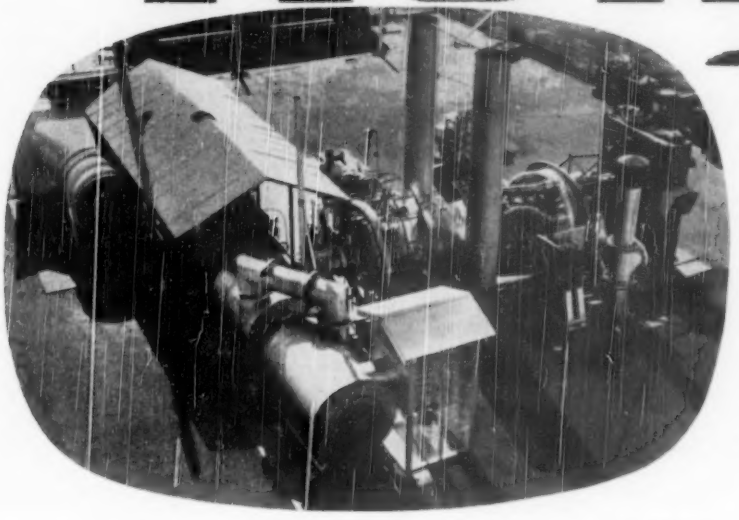
According to Bell, this is "one of the most important and fundamental advances in computer techniques since the development of these powerful scientific tools." It is expected this development also will be significant in the communications field where transmission is on a code basis.

The basic concepts underlying the technique are the direct result of pure mathematical research carried out by Dr. R. W. Hamming, Bell Laboratories mathematician. Equipment representing a working application of these mathematical principles already has been built by Bell, but has not as yet been embodied in a complete computer. Bell says similar apparatus could be easily fitted into future calculating machines.

This development is considered to be particularly valuable in the case where engineers feed in a problem and leave it up to the computer to solve it overnight or even over a weekend. Now, when the computer makes a mistake it will record that fact, including the approximate location, and then go on to correct the error.

The laboratory model has been designed to correct one mistake at a time and to catch—but not correct—two

ROHR



Testing—

to build

better!

faster!

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First of its kind ever designed . . . the ROHR-built test stand for testing exhaust systems. Constructed to test the exhaust system of the B-36 Super Bomber, it simulates temperature, pressure, vibration and other conditions experienced at altitudes *above 40 thousand feet.*

This unique construction offers proof of continued testing by ROHR to build things better! faster! cheaper! When it's made of metal . . . and you want it built properly . . . quickly . . . and at the right price . . . come to ROHR.

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simultaneous errors. Although it can be done, Hamming does not believe it is economically feasible to design the unit to correct simultaneous errors since the chance of two breakdowns occurring at once is extremely small.

The new method can be applied to any digital computer, either electronic or relay type, according to Bell.

New Hydraulic Fluid

An improved type hydraulic fluid and a new synthetic grease for aircraft use have been developed for the Navy's Bureau of Aeronautics.

The hydraulic fluid—Hydrolube N-1—is an improvement over the earlier Hydrolube U-4 and uses only five instead of nine ingredients. The hydrolube fluids are basically mixtures of ethylene glycol and water to which have been added substances to check corrosion; thickeners to improve viscosity; and lubricating agents. Other improvements in the new hydrolube include the development of better materials added to the original mixture and the combination of functions in the added materials.

The hydrolube fluids are non-inflammable and are specially designed to eliminate fire hazards caused by combat damage to hydraulic lines.

The new synthetic grease was originally developed by the Naval Research Laboratory for BuAer and has since been improved and procured commercially. It has been in test service on Navy and Air Force planes for over two years.

The two new lubricants are significant, according to Rear Admiral Alfred M. Pride, chief o BuAer, because they use only chemicals produced in the United States and can be used on a wide variety of equipment from large caliber guns to all parts of aircraft.

British Planes Filmed

"British Aircraft Review—1949," motion picture made by Shell Oil film unit, shows the parade of planes at the Society of British Aircraft Constructors show at Farnborough last September. Highlight of the film is the very steep climb exhibited by the new Canberra jet bomber, and the very tight performance of Britain's jet craft.

Featuring unusual aerial photography, the film shows interesting flight shots of these and other craft—Westland Wyvern (first combat turboprop), Hermes V, Viscount, Canberra, Comet, Hawker, Avro delta wing jet, Brabazon, Venom, night fighter version of Vampire, and Dove with reverse props.

The 16mm. film runs for about 20 min. and is available for showing, free of charge, from Shell Oil Co., 50 West 50th St., New York 20, N. Y.

The picture above shows just a few of the many bellows assemblies that are made to order by Clifford for leading firms. Hydron Bellows Assemblies perform many different functions, such as:

- Actuating switches or valves for accurate control of temperatures and pressures.
- Sealing rotary shafts against leakage of liquid or gas.
- Providing a flexible joint for instruments combining rotary motion and hermetic seal.
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Why not investigate to see what Clifford bellows assemblies may do for you? Our engineers will be glad to make a confidential analysis of your sketches and specifications. No obligation, of course. Just write: CLIFFORD MANUFACTURING COMPANY, 136 Grove Street, Waltham 54, Mass. Division of *Standard-Thomson Corporation*. Offices in New York, Detroit, Chicago, Los Angeles.

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HYDRAULICALLY-FORMED BELLOWS
AND BELLOWS ASSEMBLIES

ALL-ALUMINUM OIL COOLERS
FOR AIRCRAFT ENGINES

SALES & SERVICE

Luscombe Back

TEMCO's H. L. Howard heads re-organized firm. Early deliveries seen.

A newly re-organized Luscombe Airplane Corp. is getting set to make a comeback in the lightplane field with the aid of Texas Engineering and Manufacturing Corp., Dallas, Tex.

Under a plan initially proposed by Temco last December, new management will be headed by H. L. Howard, executive vice president-treasurer of Temco. He was elected president and a director of Luscombe. Other directors are: D. Harold Byrd and Robert McCulloch, of Temco's board.

► **Production Plans**—Production is to be started as soon as possible at Luscombe's Garland, Tex. plant, and will include manufacture of liaison planes for domestic and foreign use, agricultural craft, and spare parts for the 6000 Silvaires now in use.

A refined version of the T-8F-L Observer has been entered in the USAF liaison plane competition at Wright Field. Several foreign contracts for this model are now being negotiated. Also slated for revival is the two-place Sprayer, an improved 90-hp. Silvaire De-Luxe, and a stripped Economy Silvaire for which owners and operators will supply power plants. The company hopes to begin deliveries of the latter two types in late June or early July of this year.

► **Distributor Setup**—Many of the former Luscombe distributors are being utilized. Howard emphasized that a full line of Luscombe-manufactured parts is now available, and spares can be obtained through these former Luscombe dealers or by contacting the company's home office in Dallas.

Hicksville Club Seeks New Quarters

The famed Aviation Country Club, Hicksville, L.I., N. Y., is looking for a new home. The club closed down its operations at the site Mar. 31. A housing development consisting of over 10,000 private homes had gradually encompassed the approximately 87-acre former potato field and completely destroyed the comparative isolation enjoyed by the club since its founding June, 1929. So the members recently voted to sell the site to the housing contractor.

The flying service operated at the field by Mal Stevenson is also seeking new quarters. The single hangar, which used to hold about 25 planes, has been torn down and the field is plowed up. Members have scattered to various nearby airports, the majority now using facilities at Roosevelt Field, L.I.

The club's board of governors has circulated a questionnaire among members to aid in determining the club's future and selection of a new site. A new location further out on Long Island is under consideration.

► **History**—The club was founded by a group of sportsman pilots under the guidance of Jack Reeves and charter members included Grover Loening, George Post, Charles Lawrence, Luis De Flores, Ed R. McDonnell, Chance Vought, William C. Leeds, Roland Palmedo, James B. Taylor, Jr., "Pete" Brooks, and C. V. "Jock" Whitney. The club had an active list of about 200 members and achieved a record of only one injury due to flying during its stay at Hicksville.

An outstanding yearly function was a demonstration air meet each spring, when manufacturers displayed their newest models to audiences numbering about 600-750 members and guests.

Harrington Crash Findings Reported

Civil Aeronautics Board has released the report of investigation into the fatal DC-3 crash of Harrington's, Inc., last November, which took the life of pilot J. R. "Bud" Harrington, former member of the three-man National Aviation Trades Assn. Advisory Committee in 1947-48, and two other crew members. The crack-up occurred 3250 ft. south and 880 ft. east of runway 36 during an ILS approach to Akron-Canton Airport, Akron, Ohio.

The Board determined that the probable cause of the accident was improper execution of an instrument approach which resulted in the aircraft being flown to the right of the proper approach path at an altitude too low to clear the terrain. The plane's initial impact was made with tops of trees at an altitude of about 70 ft.

Findings state that there was no evidence of mechanical malfunctioning, and airborne and ground radio facilities and ILS were reported to be functioning normally.

Harrington's, Inc., was an irregular carrier located at Cleveland, and had a large irregular carrier certificate. Harrington had an airman's certificate with airline transport pilot's rating, and had logged about 5000 hr. including approximately 600 hr. multi-engine time, and 275 hr. instrument time.

BRIEFING FOR DEALERS AND DISTRIBUTORS

► **FOR THE SHOW-CASE**—A new type of Polaroid sun glasses featuring variable lenses to control light transmission and thus vary glare intensity is an item of interest for airport distributors. Front lenses of glasses are fixed and rear lenses may be rotated by means of a tab through 90-deg., permitting infinite variation from full brightness to practically full dark, claims manufacturer, Pioneer Scientific Corp., 295 Lafayette St., New York 12, N. Y. Prices to dealers are $8 per pair in lots of one to five and $7.50 in lots of six or more. A free counter demonstrator is given with each order of six. Glasses retail at $12.50 per pair.

► **BULLET TRANSFER** — Aircraft Manufacturing Co., Tyler, Tex., maker of Johnson Bullet (AVIATION WEEK Feb. 27) under license, has acquired all type certificate data on the craft and plans to continue producing it under the name Texas Bullet 205. The Bullet is a four-place all-metal low-wing plane powered by a 205-hp. Continental. Company's officers are W. E. Stewart, president; A. S. Genecov, vp; S. J. Taylor, secretary-treasurer; and Sam Gibbons, asst. secretary-treasurer.

► **REVENUE TIP**—Local papers and radio stations are good customer bets that the alert fixed-base operator doesn't overlook. Witness the case of Hunter Flying Service, Cedar Rapids, Iowa, which has leased a Beech Bonanza to the Cedar Rapids Gazette and station KCRG to enable their staffs to get local news and pictures, and also to cover winter training of baseball teams in Florida.

► **"ANTIQUES" SOUGHT**—Massachusetts Aeronautics Commission is trying to locate some really old-time airplanes to be used in a static display during Boston's airport jubilee day portion of that city's mid-century jubilee. If you have such a plane and want to enter it, contact the commission at Logan International Airport, Boston. The display is set for May 20.

► **JAMIESON DISTRIBUTOR NAMED**—Revere Airways, Mass. has been appointed New England distributor for new three-place Jamieson Jupiter all-metal personal plane now undergoing CAA tests.

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If it's quality you're after—if its quantity you want—if it's a special specification you need, Auto-Lite has the answer. In 39 years' experience, Auto-Lite research and advanced laboratory skills have assisted leading aircraft manufacturers in meeting difficult wire and cable problems. Today, the tremendous output of the new Hazleton plant, combined with the now increased facilities at the Auto-Lite Port Huron plant, makes it possible to accept additional aircraft wire and cable business. Money cannot buy better wire and cable.

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Wire and Cable Division
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AUTO-LITE MEANS PRECISION MANUFACTURING

LOW TENSION

Aircraft Low Tension Cable Specification AN-JC-48a. Aircraft Low Tension Cable shielded Specification ANC 168.

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HIGH TENSION

Aircraft High Tension Ignition Cable sizes 5MM, 7MM and 9MM Specification ANC 130a, also to commercial standards.

Magnet wire to Specification JAN W 583 and commercial standards.

FINANCIAL

Aviation Profits Below Average

Survey shows both manufacturers and airlines pull lower returns on income than is normal for their groups.

The profitability of the aviation group can once again be viewed in proper perspective against the earnings experience of general industrial enterprises. The National City Bank of New York in its current monthly letter discloses its comprehensive compilation of 1949 net income covering a total of 3322 of the leading corporations engaged in every industrial and commercial activity.

This survey shows that a total of 27 aircraft and parts companies reported net income after taxes of $50,878,000 for 1949 compared with only $17,727,000 for 1948. This would indicate an improvement of more than 185 percent in earnings. As a contrast, all 1710 manufacturing companies covered mustered a net income of $6998 million for 1949, down some 14 percent from 1948. Clearly, the aircraft group's gain in net profitability was the greatest revealed by any industrial category in the National City Bank study.

▶**Not True Picture**—This summary analysis of only one year's results, however, can be very misleading. As previously indicated (AVIATION WEEK, Apr. 24), the aircraft industry is essentially a contracting business and, as such, does not lend itself to an exact accounting by precise yearly periods.

Consistent earnings is not one of the aircraft industry's best traits. Examining past National City Bank compilations, it is revealed that in 1947 every industrial manufacturing group, excepting aircraft, recorded a high rate of earnings. For that year, 25 aircraft and parts companies came up with a combined net deficit, after tax adjustments, of $35,280,000.

During 1948, the peak of postwar industrial profits, the aircraft group's performance was mediocre.

Always running through yearly aircraft earnings are the qualifications peculiar to frequent tax adjustments, price redeterminations and renegotiations and other special factors. For a more correct appraisal of results in the aircraft group, it is essential to examine trends extending over a period of years.

▶**Low Profit Margin**—Of real significance in any industrial manufacturing operation, is the profit margin realized on sales. For 1949, the National City Bank grouping of aircraft and parts company showed a net profit margin of 3.3 percent on sales. This compared with only 1.4 percent for 1948 and a negative 4.0 percent for 1947.

This showing by the aircraft industry, in a period which represents the best since the end of the war, is particularly noteworthy in the light of profit limitations imposed. The chief financial officer of one of the largest aircraft companies publicly stated some months ago that the military services were inclined to permit the industry to earn about 10 percent before taxes on government contracts, or about 6.2 percent after taxes. It is obvious that the 1949 average falls far short of this measure and highlights the fact that military contracts do not always return the profits commonly expected.

It is noteworthy that all 1710 industrial companies in the National City Bank survey showed an average profit margin of 6.8 percent for 1949 and 7.5 percent for 1948. This clearly demonstrates the average rate of profitability of the aircraft group was less than one-half that of industry generally during 1949 and about one-fifth the over-all industry experience of 1948.

Of all the major industrial groups, only meat packing showed a lower profit margin than the aircrafts for 1949 and 1948 with an average experience of 0.5 and 0.7 percent, respectively. Traditionally, meat packing always has had a low profit margin because of the huge volume of business handled.

Even railway equipment builders who also have major cyclical manufacturing moves, have consistently surpassed the aircraft manufacturers in the post-war period. During 1949, they showed a profit margin of 4.4 percent against 5.4 percent for 1948 and 6.1 percent in 1947. Shipbuilding, another activity of a major contracting nature, also surpasses the aircraft industry in the rate of profitability. For 1949, this specialized group revealed a profit margin of 5.0 percent, slightly below the 5.0 percent recorded for 1948 above the 3.2 percent shown for 1947.

▶**Profit vs. Investment**—In respect to the percentage return on invested net assets, the aircraft industry has done better but continues to fall short of the over-all manufacturing average.

For 1949, the National City Bank letter discloses that the aircraft group realized a return of 8.6 percent on net assets compared with only 2.9 percent for 1948 and a negative 6 percent for 1947. In viewing this showing, what the survey neglects to reveal is the effect on earnings played by the extensive facilities used in aircraft manufacturing but which are owned by the government and leased to the separate builders. In other words, the leverage of these leased properties should increase the rate of profitability for the companies involved.

The average for all manufacturing enterprise during 1949 was a 13.8 percent return on net assets compared with 18.2 percent for 1948 and 18.4 percent for 1947. Again, the average percentage return on net assets as reported by the railway builders and shipbuilding group was higher than the aircrafts for the three year period examined.

▶**Airline Profits**—A number of interesting ratios are also disclosed in the National City Bank study on air transport profitability. This summary shows 15 air transport companies reporting net income of $17,279,000 for 1949 as contrasted with a deficit of $171,000 for 1948 and a staggering loss of $11,693,000 for 16 air transport carriers in 1947.

For 1949, the air transport group revealed a profit margin of 3.3 percent, a definite improvement over the negative 0.3 percent of 1948 as well as the negative 3.0 percent for 1947. By contrast, even the railroads were able to do better. For 1949, the roads demonstrated profit margins of 5.1 percent for 1949, 7.4 percent for 1948 and 5.5 percent for 1947. The traction and bus group, however, appear to be losing ground on this basis to the other transportation mediums. For example, for 1947 their profit margin was 4.5 percent, declining to 4.2 percent for 1948 and to 1.2 percent for 1949.

On percentage return on net assets, the air transport group led all transportation categories for 1949, with 6.6 percent return. All transportation companies averaged but a 3.3 percent return on net assets for 1949. However, while the air transport group showed a negative return on net assets for 1948 and 1947, all other transportation mediums revealed a tangible return ranging from 1.4 percent for traction and bus to 14.9 percent for shipping.

Important qualifications must also be attached to the reading of the ratios for the air transport group. For one thing, retroactive mail pay awards and temporary mail rates have an important effect upon airline earnings from year to year.

Moreover, the airline group is one of many extremes. The averaging of industry results, lumping feeders, domestic trunk lines and international systems in one grouping tends to obscure a true picture of the individual carriers taken separately.

—Selig Altschul

IT'S PESCO ON THE AVRO JETLINER

North America's first jet passenger plane

Designed to cruise at 450 m.p.h. at 30,000 feet, the new Avro Jetliner of A. V. Roe Canada Limited promises to be one of the swiftest, quietest passenger airliners ever to fly the skies.

The four Derwent jet engines, mounted in pairs, and each rated at 3500 lbs. static thrust at sea level, can push this huge, 30-ton, 50-passenger plane up into the air at a climb rate of 6,000 feet a minute . . . faster than most World War II fighters!

It takes fuel, and lots of it, to deliver this kind of power, and four Pesco fuel booster pumps, one for each engine, make certain that no engine ever goes hungry for its full share of kerosene. Pesco vacuum pumps and a Pesco oil separator are other Pesco units on this history-making passenger plane.

Ever since pressurized power and controlled flow of fuel brought greater safety, automatic operation and finger-tip control to aircraft, Pesco skills and craftsmanship have been providing the precision-made fuel and hydraulic pumps and controls that are now standard equipment on all types and makes of planes. It is experience and know-how that can help you.

Other Pesco Equipment for Jet Planes

1. High Pressure Fuel Pumps
2. Suction Relief Valves
3. Pressure Relief Valves
4. Electric Motors for Cabin Ventilators, Cabin Heaters, Windshield Defrosters, etc.
5. Landing Gear Operation:
   a. Engine-Driven Hydraulic Pump System
   b. Electric Motor-Driven Hydraulic Packages
   c. Electric Motor Actuators
6. Engine-Driven Hydraulic Pumps
7. Motor-Driven Emergency Hydraulic Pumps
8. Motor-Driven Surface Booster Pumps
9. Hydraulic Flow Equalizers
10. Hydraulic Pressure Reducing Valves
11. Hydraulic Pressure Relief Valves

engineering Pesco production

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24700 NORTH MILES ROAD BEDFORD, OHIO

Model No. 3283

FLOW: 0-3000 GPH
OPERATING PRESSURE: 50 PSI
OPERATION TIME: ONE SECOND

approved

Model No. 3290

FLOW: 0-3000 GPH
OPERATING PRESSURE: 50 PSI
OPERATION TIME: ONE SECOND

Approved, of course!

APPROVED FOR USE in military aircraft, these gate valves are adaptable to extremely high pressures for fuel and oil systems and other special requirements. Over seventeen additional features you should know about are built into these valves.

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How New Lubricant Fares in Tests

	Liqui-Moly	Liqui-Moly and oil	Oil only
Peak temperature during run (degrees C.)	118	127	No "peak"—continuous rise to failure
Time required to reach peak temperature (min.)	30	20	17
Time to failure	(Practically unlimited, longest test 30 hours.)		22 min.
Stabilization temp.	77	88	(No reductions in temp. after rise)
Degrees-per-minute rise in temp. to peak	3.1	5.1	10.2 (avg. failure-temp. calc. as 225)
Degrees-per-minute rise in temp. during 1st hour (or end of run if less)	1.2	3.4	4.6
Frictional drag on test apparatus	1 lb.	3 lb.	6 lb.

TEST RUN of Liqui-Moly was accomplished with two steel disks 3 in. in diameter, one fixed, the other rotating against it at 75 psi. pressure and 1700 rpm. speed.

Metal-Base Permanent Lubricant

Colloidal solution of molybdenum, for use alone or as additive, resists high temperatures and pressures.

A new use of the widely known lubrication properties of molybdenum potentially promises to reform lubrication techniques. Tests up to now indicate it might be a permanent lubricant, non-corrosive and resistant to high temperatures, high pressures and practically all common chemicals.

The new product, a colloidal solution with a molybdenum base, now is being marketed by Lockrey Co., College Point, N. Y., under the name of Liqui-Moly. According to A. J. Lockrey, its developer, it can be added to circulating oil systems to improve lubrication. Or, in cases where cooling effect of a circulating system is not required, Liqui-Moly can replace oil entirely he claims.

▶ **Old Idea, New Twist**—Use of non-petroleum substances for lubrication has been and is being tried today with varying degrees of success. Silver and graphite both have their uses for this purpose. And there is, of course, the whole family of silicones. Use of molybdenum to supplant or supplement regular lubricants was pioneered by government research agencies.

As Lockrey explains, "molybdenum is an extremely greasy metal, practically indestructible at high temperatures and pressures, certain forms of it having the peculiar faculty of plating . . . firmly to any friction surface."

Others beside Lockrey have taken advantage of this property of molybdenum. Westinghouse Electric Corp. has been producing a line of molybdenum lubricants for more than three years. Alpha Corp., Greenwich, Conn., turns out powder called Molykote. Now it, too, is working on a colloidal solution.

But Lockrey says that for Liqui-Moly, molybdenum is "treated under a special process which to my knowledge has never been used before in molybdenum lubricant products put out by other companies."

▶ **Permanent Film**—Lockrey says that his product forms a permanent friction-supporting film which cannot be squeezed out by any amount of pressure, thus protecting bearings against scoring or seizing even after all the oil has been burned out.

AVIATION WEEK asked Lockrey if that meant an aircraft engine would continue to operate even after the oil system failed if Liqui-Moly had previously been added to the oil, his answer: "Although we have never made such a test on a complete engine, our tests on a smaller scale would indicate that an aircraft engine should operate at least longer than usual after loss of oil."

▶ **Keeps Temperature Down**—"Actual tests have shown that friction surfaces running at high speed under heavy pressure will heat up more than 300 percent faster with ordinary lubricating oil than when running dry with only Liqui-Moly, and moreover that the temperature rise with oil is continuous until failure and seizure, whereas with Liqui-Moly, it reaches a stabilization point and then usually recedes."

Lockrey says tests made by the Flight Propulsion Research Laboratory of the National Advisory Committee for Aeronautics show effective lubrication by molybdenum at pressures as high as 225,000 psi. and at speeds as high as 8000 surface fpm.

Other tests show lubricity unaffected by working temperatures as high as 750 F. or by sub-zero conditions. Under certain conditions it is said to be effective up to 1000 F. and it will not alloy with steel at temperatures as high as 1800 F.

▶ **Curtiss Tests**—First interest in Liqui-Moly shown by the aviation industry is the Propeller division of the Curtiss-Wright Corp. at Caldwell, N. J., where the product is being tested on a "restricted project."

Liqui-Moly in its present state could not be used to carry off heat in a circulating system because the solution in which the molybdenum is suspended evaporates. Although in its "dry state" it will "maintain sufficient lubrication, oil or some other circulating medium obviously is needed to carry off heat generated by combustion and other sources."

▶ **Another Version**—But the company says "another, non-volatile form of Liqui-Moly will shortly be offered, with a high viscosity index, for applications where the coolant effect of a body of circulating fluid is desired."

This product, the firm adds, "shows relatively slight viscosity change from −40 to 800 F., does not carbonize or break down with age, and probably comes as close as possible to the ideal of permanent lubrication."

▶ **Auto Use**—Lockrey gives this example to point up the efficiency of Liqui-Moly as a lubricant. "One of the engineers at the mine in Colorado where our molybdenum is produced has run his car 130,000 mi. without a ring job. And his oil consumption is still only ½ qt. per 1000 mi. He adds ½ pint of Liqui-Moly to his oil every 1000 mi."

The product comes in three types:

- **Liqui-Moly Regular**—about the consistency of No. 20 SAE motor oil, for use where relatively thin liquid is required.
- **Liqui-Moly Grease**—for use alone or with grease in grease guns.
- **Liqui-Moly Concentrate**—for use as an oil additive, containing about four times as much molybdenum as "Regular." Prices range from $2-$6 a pint.

(More New Products News on p. 43)

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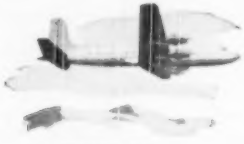

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For the private flyer, Bendix Radio builds airline quality equipment at prices exactly proportioned to every job and every purse—from a small battery-operated receiver on up.

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In the present defense program, Bendix Radio is engaged in helping to find answers to completely new problems. Bendix Radio builds equipment for America's newest Air Force planes.

Bendix Radio

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Made Where It Counts—

In the Air!

When it comes to selecting aircraft radio equipment, it's wise to look first at the log book—*actual flying time* is the only *sure* proof of airworthiness. On that score alone Bendix Radio deserves your vote, for Bendix Radio has flown *more air hours than any other make.* The reasons for this superiority? There are plenty of them: the largest, most modern Plant in the industry; an engineering staff second to none; the experience gained in pioneering V.H.F. Omni-Directional Range navigation systems, Radar, G.C.A. and many others. This background of leadership is your assurance that any radio equipment bearing the Bendix name plate can always be depended upon to deliver maximum performance where it counts most—in the AIR!

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F-80
T-33
F-90

World Leader in

JETS

The Lockheed Aircraft Corporation is the largest producer of jet aircraft in the world.

Lockheed's five-year continuous production of practical jet airplanes almost equals the total output of all other U.S. manufacturers combined.

The world's first mass producer of jets, Lockheed established this leadership with the F-80 *Shooting Star*, America's first operational jet airplane. This fighter, like other Lockheed jets (the T-33 two-place jet trainer and the new F-94 interceptor), is noted for its speed, versatility and strength.

Carrying on this tradition is the newest member of the Lockheed jet family, the rugged, twin-engined F-90 Jet Penetration Fighter, now undergoing evaluation tests by the U.S. Air Force.

This broad experience in the development of practical jet aircraft is invaluable in the Lockheed laboratories where the designs of the future are taking shape today.

LOCKHEED

Aircraft Corporation, Burbank, California

Look to Lockheed for Leadership

Voltage Regulator

Type AVR-89 carbon pile voltage regulator, offered by **Westinghouse Electric Corp.**, Pittsburgh, Pa., is designed to maintain constant voltage output from 30v. d.c., 100 to 400 amp. aircraft generator over its range of speed and load. Unit weighs 2.75 lb. and conforms to specification AN-R-1a.

Regulator has carbon stack resistance of 1.25 to 35 ohms and is rated at 90 watts. It will carry an overload current of 15 amp. through the carbon stack for 1 hour, and it maintains equal load division when two or more generators and regulators are operated in parallel.

Regulator armature friction is reduced by use of a six leaf cantilever spring which bears on a polished surface. Molded ceramic insulator holds carbon intact and reduces heat transfer from stack to spring. A copper cup and flat steel shield provide an air pocket as well as spring damping. Regulator life is said to be extended up to 300%.

Carbon discs have small outside diameter, but are thick enough to permit lapping smooth and parallel to within .0004 in. Integral cast housing and anchored armature reduce weight and effects of vibration and acceleration on controlled voltage. A ring of temperature compensator steel alloy magnetically compensates for changes in ambient temperatures from —55 to 71 C.

High-Speed Fueler

Improved aircraft refueling trucks with greatly increased pumping capacity and higher maneuverability are being leased to airlines by **Shell Oil Co.**, 50 West 50 St., New York 20, N. Y.

Some of these trucks already are servicing Constellations operated by Eastern Air Lines, in Charlottesville, N. C. More are being built for use in other parts of the country.

Highlight of this truck is two independent hose systems, each capable of delivering more than 200 gpm. While there already are some other 200 gpm. trucks in operation, most still have a fuel delivery rate ranging anywhere from 75-120 gpm. Some trucks rated for 75 gpm. actually drop down to a delivery rate of about 55 gpm., an airlines refueling expert says.

The new Shell truck has greater maneuverability, despite large tank capacity, through the use of two axles instead of the usual three or four. Another important feature on this truck is the jet eductor system. This system is part of the valving equipment and it provides suction to collapse the hose when not in use to speed handling and reduce refueling time. The 2½ in. hoses permit evacuation of gasoline from the plane's tanks when required.

'Wet Water' Capsules

A development which makes water more effective as a fire fighting agent is being marketed by **Aquadyne Corp.**, 220 E. 42 St., New York 17, N. Y.

It is a capsule, designed to be mixed with water, called Pyrodyne. This product is a solid composition weighing 5 lb. and containing highly concentrated active blends of wetting elements.

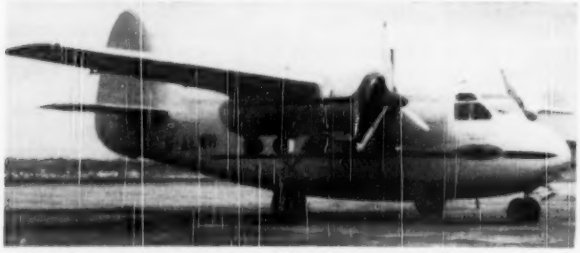
One capsule produces more than 1000 gal. of multiphase "wet water" by reducing surface tension of ordinary water or sea water from about 72 dynes to 30 dynes. Cost of this process comes to 6½ mills/gal. Aquadyne says this is ¼ the cost now prevailing.

Pyrodyne treated water will put out deep seated fires quickly and completely with approximately ¼ the amount of water usually required, the firm states. It "penetrates deeper, diffuses faster, wets to the seat of the fire and cools quicker than any other fire fighting product . . . there is virtually no waste runoff." In the aircraft industry, it would be specially suitable for use in plants and warehouses.

According to the firm, 80 percent of plain water hosed on a fire is ineffective. It runs off as waste with its heat absorbing capacity unused.

To permit effective use of Pyrodyne capsules, company has developed two-capsule capacity Hydroblender units which can be hooked into water source and stand ready to deliver more than 2000 gal. of Pyrodyne solution before firemen must add new capsules. Capsules can be replaced in a fraction of a minute. Also Siamese Hydroblender installations with by-pass valves are designed to deliver any amount of treated water without interruption.

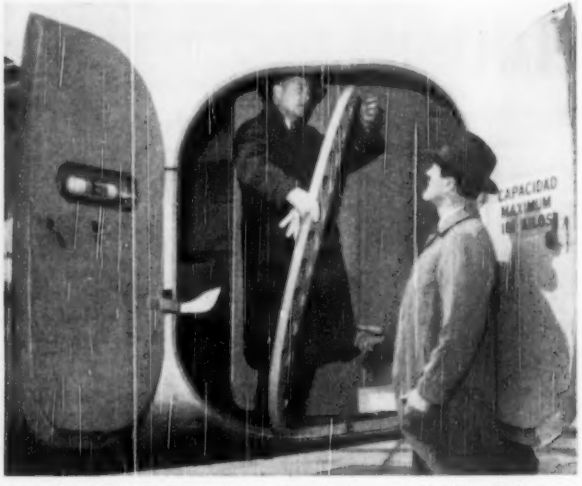
PERCIVAL PRINCE, one of nine bought by Shell Oil Co., two of which have just passed through the U. S. on their way to Venezuela.



AT WASHINGTON AIRPORT, the Prince shows its special features, including dual nosewheels, streamlined spinners, good passenger visibility due to high-wing arrangement, small frontal area of Alvis Leonides engines.

British Feeder Transport Aimed At U. S. Market

NOSEDOOR is examined by Sydney Nesbitt, Atlantic Aviation president; Ian Brown, Percival sales manager; Christopher Clarkson and Peter Hadfield, British Embassy.



CONVERTIBLE DOOR is demonstrated by Brown to Nesbitt. Center post, which Brown is removing, and door at left make conventional passenger opening. Removal of post doubles door size for cargo loading.

Nesbitt to Sell Prince in U. S.

Veteran aircraft salesman hopes to build field here for 8-12 passenger British feederliner.

The 10-place twin-engine Percival Prince, postwar British transport, is seeking to find its niche in the American airplane market as a feederliner.

Sydney Nesbitt, Atlantic Aviation Corp. president, Teterboro, N. J., a veteran airplane salesman, has taken the U.S. distributorship for the Prince as a feederliner.

▶ **Conducting Survey**—He is conducting a survey among American operators of low-density passenger routes to see how the new plane, tentatively pricetagged at around $110,000 for delivery in this country, will fit into their programs.

Nesbitt continues as Beech distributor for executive planes. He inspected the Prince first hand at Washington, where two of the planes stopped at National Airport on a delivery flight from Luton Airport, Bedfordshire, England, to Venezuela. The two planes came across the North Atlantic, ferried by pilots of the Silver City Airways, London, and are being delivered to Shell Oil Co. for executive travel and cargo use in Venezuela. They are part of an order of nine Princes which Shell has placed with Percival.

▶ **ICAO Standards**—The high-wing all-metal monoplane, fitted with retractable landing gear, is described by its manufacturer as the first transport to comply with ICAO transport category. A standard (with certain minor exceptions which is now being corrected.)

Powerplants are two British Alvis Leonides radial engines of 550 hp., each turning three blade de Havilland full-feathering Hydromatic propellers.

Plane is provided in passenger cabin versions with 8 to 12 seats, with baggage compartment and toilet in rear.

In eight-passenger version plane weighs 7804 lb. empty, with an 11,000-lb. gross weight. Fuel tanks for 216 gal. of fuel are provided.

Performance figures as measured under British Civil Airworthiness Requirements Section D, at 10,650 lb. gross weight include:

▶ **Performance**—Maximum speed, sea level, 215 mph.; cruising speed at 10,000 ft. at rich mixture and 2800 rpm. 212 mph.; at weak mixture and 2600 rpm. 191 mph.; at normal continuous cruising at 2200 rpm. 168 mph.; range at normal continuous cruising speed without takeoff and climb allowance 594 miles (3 hr. 32 min.) takeoff to clear 50 ft. obstacle at sea level 810 yd.; rate of climb at sea level, 115 ft./min.; single engine takeoff to clear 50 ft. obstacle at sea level, 1210 yd.; ceiling with one engine inoperative 12,000 ft.; service ceiling 23,400 ft.; stalling speed with flaps and undercarriage down, 74 mph.; fuel consumption both engines, normal continuous cruising speed, 30 gal./hr.

▶ **Middle Class**—Ian Brown, Percival sales manager, who accompanied the Shell Princes on the visit to Washington pointed out that the British plane fits in size someplace between the Beech 18 and the Douglas DC-3 among American transports.

Cabin has 6 ft. head room, and requires a single short step up from the ground to enter plane. Plane has been designed for quick maintenance accessibility to engines, and to radio and instruments, through a nose door.

Salaries of Feeder Executives Listed

Salaries of feeder airline executives in 1949 showed relatively little change over 1948, and for the most part remained considerably below payments to trunkline officers (AVIATION WEEK, Apr. 24).

Highest-paid feederline executive last year was Trans-Texas Airways President R. E. McKaughan, who received $22,498, compared with $25,000 in 1948. Runners-up were All American Airways President Robert Love, who was paid $15,000 in both 1949 and 1948; and C. M. Belinn, whose salary as president of Los Angeles Airways, helicopter mail carrier, rose from $12,737 in 1948 to $15,000 last year.

Other 1949 salaries, with 1948 comparisons in parentheses where available, were:

▶ **All American**—Charles Wendt, vp & treas., $10,000 ($10,000); Halsey Bazley, vp, $10,000 ($10,000); David Miller, secy., $7500 ($6375); Harold Kenyon, asst. secy., $5700; Walter Short, asst. treas., $6600.

Persons holding over 5 percent of company's outstanding stock on Dec. 31, 1949: Robert Love, 15.35 percent.

▶ **Bonanza**—Edmund Converse, president, $6000; Wesley Durston, vp, none; Florence Murphy, secy. treas., $3408.

Over 5 percent stockholders: Edmund Converse, 41 percent; Wesley Durston, 49.9 percent.

▶ **Central**—F. K. Johnson, board chairman, none; Deane Gill, secy.-treas., none; Keith Kahle, president, $4250; Donald Ehrhart, vp, $3600; Robert Harding, vp, $3500.

Over 5 percent stockholders: F. K. Johnson, 30 percent; Keith Kahle, 13.74 percent; Donald Ehrhart, 10 percent; Robert Harding, 10 percent; Deane Gill, 30 percent; Juanita Lauer, 6.26 percent.

▶ **Empire**—Joe Lux, president, none (none); T. E. Robinson, vp, $4800; Arvid Nelson, secy.-treas., $2600 ($2600).

Over 5 percent stockholders: Joe Rosenkranz estate, 21 percent; Joe Lux, 21 percent; Wagner & Robinson, Lewiston, Ida., 35 percent preferred and 18 percent common.

▶ **Helicopter Air Service**—T. H. Reidy, president, $12,000; V. M. Harding, vp, none; C. E. Cessna, secy., none; R. B. Kiel, asst. secy. and asst. treas., $4569.

Over 5 percent stockholders: T. H. Reidy, 37.8 percent; T. C. Rodman, 9.9 percent; V. M. Harding, 9.4 percent.

▶ **Los Angeles Airways**—M. J. Burke, secy., none (none); Earl Jochim, asst. secy. & asst. treas., $3800 ($800); Wayne Fisher, treas., none (none).

Over 5 percent stockholders: C. M. Belinn, 28.7 percent; Martin Burke, 12.8 percent; Bush & Co., 5 percent; Wayne Fisher, 8.7 percent; Kathryn Fisher, 8.5 percent.

▶ **Mid-West**—F. C. Anderson, president & treas., $8400; Leo Brennan, vp, $3150; Ray Nyemaster, secy., none.

Over 5 percent stockholders: F. C. Anderson, 49.86 percent; Leo Brennan, 49.86 percent.

▶ **Monarch**—H. S. Darr, president, none (none); R. M. Wilson, exec. vp, $9000 ($9000); E. N. Levin, secy., none (none); D. T. Myers, asst. secy., $2230 ($2035); C. A. Myhre, treas., $7200 ($6300).

Over 5 percent stockholders: R. M. Wilson, 7.7 percent; Darr Aero Tech., Chicago, 52.9 percent; Wilson-Bonfils Flying School, Denver, 35.4 percent.

▶ **Piedmont**—T. H. Davis, president & treas., $12,000 ($11,375); R. S. Northington, vp, $4800 ($4800); M. P. Faro, secy., $4800 ($4750); R. D. Hager, asst. to president, $10,000 ($9533).

Over 5 percent stockholders: T. H. Davis, 10.84 percent.

▶ **Pioneer**—Robert Smith, president, $12,000 ($12,000); Harold Siefert, vp, $10,200 ($9000); H. L. Lawrence, vp, $7500 ($6000); Eugene Bailey, secy.-treas., $8400 ($7200); W. F. Long, board chairman, none (none).

Over 5 percent stockholders: W. F. Long, 30.25 percent; Robert Smith, 29.72 percent.

▶ **Robinson**—Robert Peach, exec. vp, $10,000 ($2519); John Carver, vp & secy., $8440 ($2344); William Fields, treas., none; H. S. Goldsmith, asst. treas., $4400; Jane Everhart, asst. secy., $2658; B. J. Miner, board chairman, none.

Over 5 percent stockholders: L. N. Simmons, Charles Johnson and E. V. Underwood, Ithaca, N. Y., trustees, 57.9 percent; Robinson Aviation, Inc., Teterboro, N. J., 29 percent; F. K. Hussey, New York, 6 percent.

▶ **Southern**—F. W. Hulse, president, $6750; T. D. Eve, vp, $4052; Ike Jones, vp, none; George Estey, secy.-treas., $4081.

Over 5 percent stockholders: F. W. Hulse, 18.43 percent; Jemison Investment Co., Birmingham, Ala., 13.7 percent; Marx & Co., Birmingham, 15.41 percent.

▶ **Southwest** — Leland Hayward, board chairman, none (none); J. H. Connelly, president, $10,000 ($10,000); T. R. Mitchell, vp, $11,200 ($9500); A. W. Johnson, treas., $10,200 ($9000); Walter Roche, secy., none (none); C. H. Sullavan, asst. secy. & counsel, $8400 ($7200); F. L. Hendrickson, asst. secy., none (none).

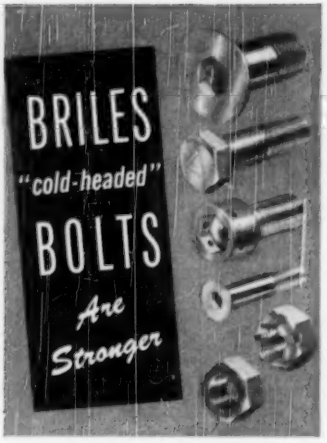
Over 5 percent stockholders: J. H. Connelly, 22.89 percent; Leland Hayward, 22.23 percent; Gilbert Miller, New York, 5.58 percent.

▶ **Trans-Texas**—H. E. Erdmann, vp, $10,000 ($10,922); M. L. Muse, acting secy.-treas., $5360 ($2053).

Over 5 percent stockholders: R. E. McKaughan, 33.3 percent; L. D. McKaughan, 26.4 percent; Mrs. R. E. McKaughan, 5.5 percent; Houston Transportation Co., 9.1 percent.

▶ **West Coast**—Nick Bez, president, $6000 ($6000); H. A. Munter, vp, $12,000 ($12,000); William Calvert, vp, none (none); R. A. Duwe, secy.-treas., $6700; G. R. Cook, vp whose term expired May 19, 1949, $6400 ($9600); W. A. Casbleton, secy.-treas. whose term expired May 19, 1949, $1600 ($4800).

Over 5 percent stockholders: Nick Bez, 9.87 percent; Auchinchloss, Parker & Redpath, New York, 32.72 percent; The Milwaukee Co., Milwaukee, 8.03 percent.



You can count on Briles Bolts for extra strength & longer life

The chrome 'molly' steel stock is **cold-headed**. The grain of the stock follows the shape of the bolt head, rather than running vertically through it. After heat treating, the threads are **rolled on**, forcing the grain to conform to the thread shape as well—giving both bolt head and thread extra granular strength, better wearing qualities.

You can bank on Briles quality of material and workmanship too—always. From the raw bar stock to the finished A.N. and N.A.S. standard bolt or nut, Briles precision methods and scrupulous inspection plus material control, assure the highest standard of constant quality.

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All types of Aircraft Fasteners to your specifications. Cold-Headed Bolts from 3/16" to 1" diam.

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▶ **Wisconsin Central**—Francis Higgins, president, $11,582 ($10,415); Harold Carr, exec. vp, $9598 ($6816); Arthur Schwandt, secy.-treas., $6919 ($6230).

▶ **Wiggins**—Joseph Garside, president, $5200; Harold Shaw, exec. vp & treas., $7800; Frederic Tobey, clerk, $5138; Sven Stenberg, asst. treas., $4680; Harold Martin, asst. treas., $4680; Miriam Vanderslice, asst. treas., $3120.

Over 5 percent stockholders: Joseph Garside, 5.6 percent; Kuhn Loeb Co., New York, 6.2 percent; Frederick Warburg, New York, 7.1 percent; Hugh Knowlton, New York, 5.9 percent; Laurance S. Rockefeller, New York, 5.2 percent; E. W. Wiggins, trustee, 19.9 percent.

(Note: In a number of cases, salaries do not cover a full year because many feeders were not operating throughout 1948 and 1949.)

West and South Get Bargain Rates

Airfreight shippers on the West Coast and in such southern areas as Florida, Louisiana and Texas will soon be offered new bargain rates on cargo moving eastward or northward.

At the urging of such all-cargo operators as Slick Airways and the Flying Tiger line, the Civil Aeronautics Board has issued an order authorizing backhaul tariffs as low as 60 percent of present minimums of 16 and 13 cents a ton mile. The new rates apply to about 50 percent of the total cargo now moving east or northbound and should help fill empty cargo space now available in these directions.

▶ **Some Items Excluded**—Excluded from the reduced rates are such premium commodities as cut flowers, household goods, human remains, ladies' hats, personal effects, precious metals, art works, live animals and wearing apparel on racks or hangers—all of which are now moving in sizeable quantities at or above present minimum tariffs.

CAB surveys showed that not only Slick and the Tigers but also combination carriers such as American and United were experiencing low cargo load factors on the eastbound transcontinental haul. A similar situation was apparent northbound from Florida and Texas.

The board found that not only have the carriers suffered revenue losses from empty space in the backhaul direction but also have restricted their operations in the heavy-flow direction because of the backhaul problem. CAB rejected the contention of American and United that new low directional rates are not needed and that intensive sales effort and promotion can correct the unbalanced traffic flow.

▶ **Higher Rates Eyed**—CAB's latest move in no way reflects a Board belief that freight rates generally are too high. In fact, CAB is worried about the tendency of the carriers to establish cargo tariffs right on the minimums and has instituted an investigation to correct the situation as soon as possible.

Authorization for the new, low directional rates will expire no later than Sept. 1, 1951. The backhaul tariffs go slightly under 8 cents a ton-mile on the long haul—far below fully allocated costs. But they are designed to yield the carriers considerably more than the estimated 2¼ cents a ton mile out-of-pocket costs.

Thus the new directional rates should permit a contribution toward the carriers' overhead in a situation where empty space is available. Slick's operating costs during the first nine months of 1949 were 18.77 cents a ton-mile, and the Flying Tigers' costs were 26 cents a ton-mile.

Aussie Carrier Starts Air Coach

(McGraw-Hill World News)

Melbourne—While the two major Australian airlines are wondering how long they can continue flying passengers at pre-devaluation rates without going broke, the major outsider in interstate air transport—Ansett Airways—has announced a new air coach service between state capitals which undercuts them by 15 percent.

Ansett admits that the new service has distinctly second class travel features. Its DC-3s are packed with 28 passengers while the major lines seat 21 to 24 in the same type. There will also be economies in meals and other services.

▶ **World's Cheapest**—Nevertheless, the new Ansett fares set probably a world record for cheap air transport under conditions of safety and reasonable comfort. For instance, the flight from Melbourne to Hobart (Tasmania) via Launceston, a distance of 381 miles, has been reduced to $11.20. This works out at a shade less than 3-cents per passenger mile. To get all the through traffic it can, Ansett charges disproportionately high rates between intermediate stops.

TAA, the government airline, is facing enough trouble this year even without Ansett's antics. The Liberal-Country Party cabinet which took office late last year is pledged to see that TAA pays its own way instead of running up deficits at taxpayers' expense.

However, there is no indication of what is going to happen if the government service keeps losing money. TAA cannot expect much help from the new administration in trying to pull itself out of the red. On the contrary, the line may have to share its fat airmail contracts with private airlines and it may also lose its monopoly on the transport of parliament members to and from Canberra.

CAB Action Hits Alaska Nonsked

Nonscheduled airlines are continuing to take it on the chin as a result of the Civil Aeronautics Board's drive to enforce strictly its economic regulations.

The Board has revoked the letter of registration held by Mt. McKinley Airways, Anchorage, Alaska, and has ordered that carrier to cease and desist from further violations of the Civil Aeronautics Act. At one time, Mt. McKinley was among the best-known irregular operators on the Seattle-Alaska run.

▶ **Willful Violations**—CAB said the company "knowingly and willfully" violated regulations by operating more frequently and regularly than it was permitted to under the nonscheduled exemption. The Board charged that Mt. McKinley showed by persistent and flagrant disregard of the Civil Aeronautics Act that it has no intention of complying with regulations (so) "revocation of its letter of registration is the only remedy to insure termination of its unlawful operations."

Meanwhile, CAB threatened to suspend the letters of registration of Coastal Air Lines, New York; Southern Air Express, Clearwater, Fla.; and Reg Robbins, Houston, Tex., if they did not file proper flight reports covering fourth quarter 1949 operations. A Board examiner also found that Golden North Airways, Fairbanks, Alaska, had violated a CAB cease and desist order issued in April, 1949, but he said the violations were not in themselves sufficient to justify revocation of the company's letter of registration.

Alaska Freight Business High

Early spring and the military construction program in Alaska are combining to increase the volume of air freight being flown to the Territory by both scheduled and nonscheduled air lines.

Pan American World Airways has scheduled several extra all-cargo flights and Northwest Airlines also is flying additional flights. Non-skeds are stepping up operations, with such companies as Air Transport Associates making three and four flights a week to Anchorage and Fairbanks. Pacific Northern Airlines is hoping to be approved as a scheduled carrier between Seattle and Juneau, oral arguments having been completed before the CAB, and will acquire additional DC-4s in that event.

Contractors bidding on military projects in the Far North have been seeking airline bids on cargo ranging up to 3 million lb. this season alone.

▶ **PAA's Cargo**—Pan American Airway's cargo consignments have included food caches destined for geographical survey parties of the Department of the Interior working far inside the Arctic Circle. Small containers of food are loaded in large black, shiny drums which are dropped by bush pilots on the tundra or river sandbars two or three weeks in advance of the land parties.

Slick Crash Report

Loss of control of the aircraft during an instrument approach to Cheyenne, Wyo., airport under conditions of heavy icing and severe turbulence probably caused the crash of a Slick Airways C-46 cargoplane last Oct. 9.

In issuing its findings on the accident, the Civil Aeronautics Board said there was no evidence of mechanical malfunctioning or structural failure of the plane prior to the mishap. Pilot, copilot and a company employe aboard the plane were killed, and the ship was demolished.

The ship was bound from San Francisco to Newark. During a stop at Las Vegas, Nev., the crew was given weather data indicating icing conditions over western Colorado. Since Slick did not have dispatcher personnel along the route, all decisions affecting the flight were left to the captain's discretion.

▶ **Judgment Questioned**—The C-46 had anti-icing equipment on the propellers but wings and tail surfaces of the plane were not equipped with de-icing boots. In view of the absence of de-icer boots and reports of icing conditions along the route, the captain did not exercise good judgment in leaving Las Vegas, CAB declared.

While approaching Cheyenne, the flight told the tower it was low on fuel, taking on ice and having difficulty maintaining altitude. The plane then encountered severe turbulence, and an unreadable transmission marked by hysteria was heard.

Two minutes later, the crew transmitted: "We are O.K. and out of it now." Shortly afterward the plane crashed about 2½ miles northwest of the airport.

AA Preferred for Toronto-N. Y. Link

American Airlines rather than Colonial Airlines should be authorized to fly nonstop between New York and Toronto, according to Civil Aeronautics Board Examiner F. Merritt Ruhlen.

AA currently is making the run with a stop at Buffalo, but must compete with Trans-Canada Air Lines' nonstop service. Ruhlen said American could

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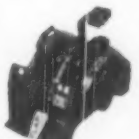

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operate the new nonstop service more economically than Colonial, which does not now serve Toronto.

Colonial contends that it needs the Toronto-New York route to compensate for the loss of revenues resulting from CAB's authorization of Trans-Canada to operate competitively between Montreal and New York. Ruhlen declared, however, that far from benefiting Colonial, the new link would only increase its operating deficit.

Miami Weather Fine

Miami points proudly to its international airport as having the best weather of five leading U. S. air terminals.

Citing newly released U. S. Weather Bureau data, Miami said its field has contact conditions (at least 1000 ft. ceiling and three mi. visibility) during 97 percent of the year. The terminal has instrument conditions (500-1000 ft. ceiling and one-to-three mi. visibility) two percent of the time, and is closed the remaining one percent.

▶ **Others Ranked**—Major airport ranking closest to Miami is New Orleans, with 91 percent contact weather, six percent instrument and three percent closed. LaGuardia Field showed 83 percent contact, 13 percent instrument and four percent closed; Chicago 77 percent contact, 19 percent instrument and four percent closed; and Los Angeles 80 percent contact, 15 percent instrument and five percent closed.

SHORTLINES

▶ **American**—Reports $1,431,285 net loss for first quarter 1950 after tax carry-back credit of $520,000, compared with $222,522 net loss (with no tax credit) in same period 1949. Principal reason for higher deficit this year was loss of revenue during eleven days of March when only about 40 percent of the schedules were operated and 40 percent of normal traffic was carried because of a strike by maintenance employes. Traffic recovered fast later in March and during first half of April was ahead of same 1949 period.

▶ **American Overseas**—Will inaugurate through-service from New York to Dusseldorf and Cologne, Germany, June 3.

▶ **BOAC**—British Labor government has assured members of Parliament that Boeing Stratocruisers used by BOAC are airworthy, despite cases of engine failure which forced the craft to return to their base on scheduled trans-Atlantic flights. It was reported that the Stratocruisers had been forced back because of engine trouble on only 13 of 427 flights.

▶ **Capital**—Almost doubled its revenue from special charter flights in first quarter 1950 as compared to the same 1949 period. Receipts totaled $163,682 against $90,476 in the first quarter last year, $22,651 in first-quarter 1948 and only $4660 in first-quarter 1947. . . . Net operating loss in February was $81,517 compared with $177,900 in the same 1949 month.

▶ **Colonial**—Carrier is asking CAB permission to cut its Washington-Bermuda fare from $126 to $85.

▶ **Eastern**—Capt. E. V. Rickenbacker, EAL president, has attacked nonscheduled lines for enlisting the sympathies of "pressure" groups by their claim that they were originally composed of war veterans. "Eastern alone has more veterans in its employ than all the nonscheduled operators combined," Rickenbacker declared.

▶ **International Flight Radio Officers Air Safety Organization**—Has asked CAB to issue a temporary emergency regulation requiring use of the 500 kc. maritime radio-telegraph distress frequency and qualified personnel on aircraft flying trans-Atlantic and trans-Pacific links. The group said an emergency regulation is needed because CAA is permitting Pan American Airways to eliminate all flight radio officer personnel by July 1, despite CAB's announcement (AVIATION WEEK Apr. 17) that it will promulgate new safety regulations regarding 500 kc.

▶ **Miami**—Airport Director A. B. Curry has recommended to CAA's Airport Use Committee that a military field be established as an auxiliary to Miami Inter-

national Airport, which is handling a steadily mounting volume of commercial traffic.

▶ **Mid-West**—The feederline carried 1328 passengers and 53,352 lb. of mail in its single-engine Cessna 190s during first-quarter 1950. Carrier completed 76.6 percent of its scheduled flights and carried passengers an average of 148 miles.

▶ **Pan American**—Has received CAB permission to suspend service at Midway Island until June 30, 1951.

▶ **Sabena**—The Belgian airline carried 168,604 passengers in 1949, compared with 146,111 in 1948.

▶ **Swissair**—Plans to start a cut-rate night air coach service between London and Zurich this month, using DC-3s and Convair-Liners.

▶ **Transocean**—Has been refused a CAB exemption to make a round-trip flight from Los Angeles to London carrying British war brides.

▶ **TWA**—Passenger flights from New York to Europe will be increased to 33 roundtrips weekly on June 1. . . . First two of an order for 20 new Constellations have been placed in international service.

▶ **United**—DC-6s are now accounting for almost 80 percent of the carrier's domestic seat mileage.

▶ **Western**—Last month celebrated its 24th year of continuous operation. . . . Audited figures show WAL and its subsidiary, Inland Air Lines, had a $432,055 net profit in 1949, compared with a $134,704 profit in 1948. . . . Western Air Lines of California, intrastate carrier to which WAL leases equipment, flew 11,500 passengers and had an 84 percent load factor in March.

CAB SCHEDULE

May 1—Prehearing conference on Wiggins Airways nonscheduled service case. (Docket 52-461E-1)

May 1—Hearing on CAB's enforcement action against Peninsular Air Transport, Associated Airlines Agency and National Air Coach Systems. (Docket 4084)

May 4—Oral argument on service to Springfield, Mass. (Docket 3748 et al)

May 8—Oral argument on labor aspects of Western Air Lines' sale of Route 68 to United Air Lines. (Docket 2839)

May 8—Hearing on case involving American Airlines' Los Angeles-San Francisco cargo flights. (Docket 4211)

May 15—Hearing on CAB's investigation of New York-Miami daylight coach service. (Docket 4302)

May 22—Oral argument on additional service to Puerto Rico. (Docket 2123 et al)

June 12—Hearing on applications of TWA and American Overseas Airlines to suspend service at Philadelphia on trans-Atlantic flights. (Docket 4228)

June 12—Hearing in reopened case on additional California-Nevada service. (Docket 2919 et al)

June 19—Hearing on CAB investigation of Northwest Airlines' tariff practices and uncertificated operations of Fly Freight, Inc., and Sterling Freightways. (Docket 4290)

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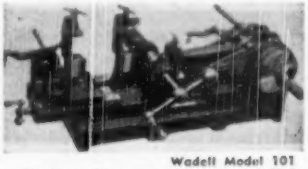

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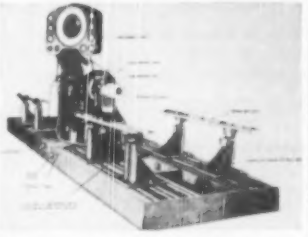

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THE END OF ORVIS NELSON?—Transocean Air Lines President **Orvis M. Nelson** has at last taken on a job that may throw him, our Transport Editor, **Charlie Adams**, thinks. "Not satisfied with heading the nation's largest contract airline, running an airport engineering and construction company, supervising the landing aids experimental station at Arcata, Cal., operating an overhaul and maintenance firm, and managing several restaurants, the former UAL pilot is authoring a novel."

* * *

BITS ABOUT PEOPLE—Early Bird **Harry D. Copland**, assistant to the regional administrator for CAA at Atlanta, likes this column's recognition of old timers in aviation and passes along word about a truly old timer, **Roland Rohlfs**, still active. He is Personal Flying Specialist in the New York CAA regional office . . . The old Air Carrier, **Fowler Barker**, about whom we continue to get inquiries, is based in the Commerce Bldg., in Washington, but he travels a lot so don't expect to find him there often. He is chief of the Development Section in the Travel Branch of the Office of International Trade of the Department of Commerce . . . Washington aviation attorney **James W. Batchelor** thinks Capital Air Lines outdid the feederlines on Mar. 5 when Flight 481, on which he was a passenger, pulled away from the terminal building at Charleston, W. Va., just 4 minutes after it taxied up. Jim says this is real accomplishment for a four-engine plane unloading, loading, and firing up again.

* * *

THIS SIGN ISN'T KIDDING!—This is a sign at Black Moshannon Airport near Phillipsburg, Pa. Its condition proves it isn't kidding. We think it's the picture of the week. It comes from **William A. LaRue**, Chief of CAA's Airways Operations Division. Strictly Personal's special pix snatcher, **Dave Callahan**, of Gilfillan Bros., Inc., rushed from LaRue's

office at Idlewild Airport with this print, using a variety of locomotion from cab, trolley and airport bus to Flotsheim, and deposited it in our editorial sanctum with a final gasp. We then lost it for seven weeks, found it, and now stop the press to show a waiting world.

* * *

OUR CLASSICAL EDITOR GETS A REFRESHER—That News Sidelight item AvWeek ran Feb. 6 about the Daedalians aroused our more scholarly readers. **John W. Stock** of the Aviation Division of Walter Kidde & Co., and **Clayton C. LaVene**, employment manager of the Engineering Division at Douglas Aircraft Co., take us to task. Reader Stock says:

"I was quite interested in your article indicating the Order of Daedalians is being revived for World War I pilots. However, as a classical scholar, I call your attention to the fact that either you or the Daedalians themselves have scrambled classical Greek mythology to their own purposes in indicating the order takes its name from 'the legendary Greek Boy Daedalus, whose feather wings, secured with wax to his shoulders, melted in the sun and dropped him to his death in the Aegean Sea, symbolic of the many World War I pilots who were shot down in flames.' To set the record exactly straight, it was not Daedalus but rather his equally legendary son Icarus, who, boy-like, placing too much reliance in his new wings, flew too close to the sun and suffered the fate of losing his wings and plunging into the sea. Daedalus, according to the legend, flew at a safe altitude, continued his flight and made a safe landing at his destination."

LaVene says "By flying 'on the deck,' Daedalus landed safely in Sicily on his flight from Crete. Thus, it is we old 'fuds' who are eligible to become Daedalans, rather than Icarans."

—R. H. W.

WHAT'S NEW

New Books

"**The Aviation Week Airport Directory—1950**" is the completely revised, handier (5½ x 8½ in.) 14th edition of this now standard authority on airport facilities in the U. S.

A total of 7124 airports and seaplane bases, including military, are listed under nine classifications. Included are data on size, type and direction of runways, field markings, obstructions, services, communications facilities, gas octanes handled, manager, telephone, airlines using field (if any), etc. The 431 terminal airports are pinpointed by black triangles opposite the appropriate listing.

Another new feature is inclusion of a separate aeronautical planning chart, replacing the individual state maps hitherto used. Also noteworthy is a listing of municipal aviation officials for the larger cities. Included are some county officials.

Among listings are airway radio communications, aeronautical facility identifications, U. S. Weather Bureau offices, state aviation boards and commissions, U. S. and Canadian certificated airlines, state taxes on aviation gasoline, American Association of Airport Executives, Aviation Distributors & Manufacturers Assn., etc.

Published by the McGraw-Hill Publishing Co., Inc., 330 W. 42 St., New York 18, N. Y., 262 pages, weight 33 oz., price $3 in U. S. and possessions, $6 in Canada and abroad.

Books in Preparation

The following titles are being readied for publication by McGraw-Hill Book Co. For further information write the company at 330 W. 42 St., New York 18, N. Y.

"**Introduction to the Transfer of Heat and Mass**" (title not final), by E. R. G. Eckert (Wright-Patterson AFB, Dayton, Ohio).

"**Structural Plastics**" (title not final), by H. C. Engel (Glenn L. Martin Co.), C. B. Hemming (U. S. Plywood Corp.), and H. R. Merriman (Glenn L. Martin Co.).

"**Supersonic Aerodynamics**" by E. R. C. Miles (John Hopkins University).

"**Aviation Handbook for Aeronautical Engineers**" (title not final), by Leslie F. Neville.

"**Air Transportation: Traffic and Management**" by Thomas Wolfe (Preston Trading Co.).

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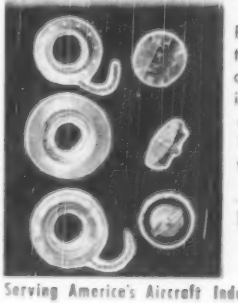

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LETTERS

The Rail Ads

Your editorial Mar. 6 ("Caboose Is Ahead of the Engine") was timely and very fair. We in the trucking industry have been watching this attack by the railroads with interest.

The truck lines as well as the railroads have a definite place to fill in the economic setup of business and both have considerable room for improvement in the services rendered to the public.

In the matter of public relations, the airlines are doing the best job of any in the transportation field. Permit me to compliment you on your article.

CHARLES R. ISRAEL
Treasurer and Business Manager
Aero Mayflower Transit Co.
Indianapolis, Ind.

Coach Proponent

I would be extremely interested in having the report below published in order to bring it to the attention of the majority of aviation executives and personnel.

Last June I submitted a lengthy report on the need for air coach service to the Civil Aeronautics Board and the Senate investigating committee and, although I received very complimentary acknowledgment, I am disappointed in the snail pace development of air coach service.

From Sept. 1 to Dec. 31 I handled the operations for Air America, Inc. at Washington and then Miami. . . Since Jan. 1 I have been with Peninsular Air Transport, who operate irregular air coach service from Miami to Newark and Chicago. . .

AIR COACH VIA SLOW FREIGHT

The scheduled airlines and the CAB after two years of viewing the non-scheduled air coach service, still cannot see the potential in low fare air travel. The demands and consideration of the public still are hamstrung by government red tape, short-sightedness, capitalistic selfishness and plain indifference.

It has been stated, time and time again, that scheduled airlines cater to a small percentage of the traveling public. It is an undeniable fact. But for some incalculable reasoning, to serve a greater portion of this group is a drastic financial risk.

"Air coach service will mean greater losses and need for more subsidy," cry the scheduled airlines. "Let us fly more schedules to meet the demands of our customers," implore the non-scheduled operators. Which one is right? The answer is very clear.

The scheduled airlines gleefully announced profits for the year 1949. How? (1) Because the air mail pay wiped out the losses of the first quarter of the year. (2) During the second quarter, industry maintained its winter fare policy of excursion rates, introduced the family plan and night coach service. This winter, business dropped off again because there were no new bargains offered by the scheduled airlines. You cannot peddle air transportation on the bargain counter, but you can increase and maintain sales if dollar value is offered.

You are not getting dollar value when you have to pay the fare of that empty seat next to you—that additional and regular rider of the scheduled airlines.

The public, when it buys regular airline transportation, is not paying for frills; it is paying for wasteful utilization of equipment and facilities and complacency.

Non-scheduled operators can show you dollar value in air transportation. Not by sacrifice of safety, as some would like to advertise, but through intelligent utilization of available load factors and equipment; consolidation of maintenance facilities, loading and ramp handling equipment, adequate but not sumptuous ticket offices and sales promotion; by employing people with ability and vision; and a willingness and eagerness of all concerned to give service and do a good job. This is the way to make coach service available and profitable.

For this ability, resourcefulness and service to the public and because the public demand for air coach service has influenced some of the non-scheduled operators to exceed their quotas of flights per month—or to put into operation new plans, which the CAB now holds illegal because of new interpretation of the regulations affecting non-scheduled operations—these airlines are restricted in their enterprise and must show cause why their certificate should not be withdrawn.

Public demand for air coach service also affects the scheduled airlines in their plans of operation, but what is the CAB's interpretation of their plan? Air coach service is offered by the scheduled airlines, under authorization of the CAB, during the early hours of the morning. It is necessary to maintain these flights in order to transport the mail and to distribute equipment for the next day's schedules, so why not attract paying loads by offering low fare rates?

In most cases it has been a great success. During the season on the New York to Miami run it was necessary to add five, six, and sometimes seven additional sections to this one flight. Public demand is forcing the airlines to put additional equipment on this one flight. How much consideration has been given to the chaos this must involve, of changing schedules to obtain the equipment and in many cases of deadheading equipment to have it available for that flight or succeeding flights the next day?

The airlines are permitted by CAB to perform unnecessary and expensive ferry flights on the lower fare traffic. This type of non-revenue flight creates a loss even on the regular schedule. Is this the type of operation to be used to illustrate that coach service for the scheduled airlines cannot be operated at a profit?

If so, it is not the fault of the service, but the way it is handled. There is a second reason why scheduled airline coach service cannot give a true picture of the demand for coach type service.

On flights of short duration, there is the inconvenience of arriving at an airport at 3 or 4 o'clock in the morning, the lack of ground transportation facilities, impossibility of obtaining hotel accommodations, and if one were traveling to his home or that of relatives, the necessity of meeting them in the middle of the night. Also, the new and inexperienced air traveler wants daylight flights for several reasons. . .

The whole problem can only be solved when the CAB and the interested airline parties realize that air transportation must soon be divided 75 to 85 percent coach and 15 to 25 percent first class service. Today it is just about the other way around.

Air coach service must utilize high density and low operating cost aircraft. . . It will also necessitate consolidation of numerous services that each and every airline now must perform individually. There must be comfort, reasonable schedules and good service for the passenger. Always there will be a class of traveler who desires the luxurious service or the necessity for greater speed. This should be available also, but at a premium price.

The time has come for some action toward making air transportation available to the masses. Air coach service is long overdue.

EDWARD G. BEALE, Station Manager
Peninsular Air Transport
Miami International Airport
Miami, Florida

World-Wide Reprint

We would very much appreciate your permission to distribute to State Dept. missions in continental Europe, Latin America, the Middle East, the Far East and Africa for translation and possible re-publication in local periodicals your "Avionics: New Segment of Air Power," from the Feb. 27 Yearbook issue of AVIATION WEEK. . . Some condensation may be necessary because of space limitations in foreign newspapers and magazines.

MISS ROYCE MOCH, Chief
Field Publications Section
U. S. Department of State
New York, N. Y.

Speed Clips

Our client, Tinnerman Products, Inc., recently called to our attention the headline you used on an article Feb. 13. It refers to "speed clips." It is a brief report on the new Grav Hill Fastener for electrical needs.

The names Speed Nuts, Speed Clips, Speed Grips, Speed Clamps, and Speed Hinge have all been registered as trade marks by Tinnerman Products. For this reason they felt we should request that your editorial staff avoid the use of these names as generic terms. I am sure you can understand their interest in maintaining these descriptive names in the trade mark category.

R. W. TWIGGS
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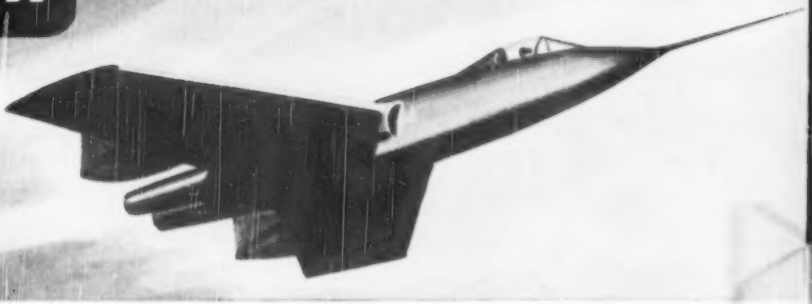

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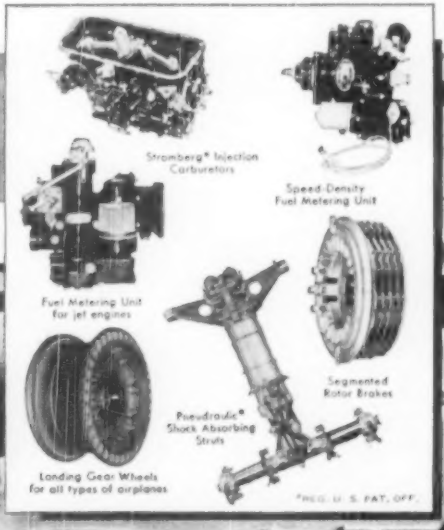
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